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ABSTRACT

This study examines the following two premises of information-seeking behavior associated with the use of nonfiction books in an electronic mode: (1) individuals generally read nonfiction books for obtaining information; and (2) users read nonfiction books in parts, rather than completely. Study data were collected through interviews with 350 patrons who borrowed nonfiction books at five of the libraries in a metropolitan public library system in Ohio. The premise that patrons consult nonfiction books mainly for obtaining information was supported by the data; and the premise that nonfiction books are read in parts was found to be true of two-thirds of all use. Study findings also suggest that electronic information systems should offer a subject approach and should allow rapid scanning and skipping through text in nonfiction books. The study research, findings on premises of electronic information systems, and findings on characteristics of nonfiction book readers and implications for electronic information systems are detailed. The text is supplemented with 6 figures, including the interview script, and 34 tables; statistical notes and 7 tables are appended; and 6 references are provided. Ordering information for Online Computer Library Center, Inc. (OCLC) publications is also provided. (KM)

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How Public Library Patrons Use Nonfiction Books

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Report Number: OCLC/OPR/RR-87/1
1987 February 6

How Public Library Patrons Use Nonfiction Books

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Abstract

The nonfiction book use study examines two premises of information-seeking behavior, that (1) individuals generally read nonfiction books for obtaining information, and (2) users do not read nonfiction books completely, but only in parts.

Based on face-to-face interviews, the study collected data on patrons who borrowed nonfiction books at five of the libraries in a metropolitan public library system. A total of 350 interviews were allocated proportionately among the five participating libraries. Interviews were conducted during both peak and nonpeak circulation periods and a scheduling algorithm was used to randomly select the hours for interviewing at each of the libraries.

The data support the premise that patrons consult nonfiction books mainly for obtaining information. That 84.4% of the patrons stated they found the information they sought shows that nonfiction books are, indeed, an important source for finding information. The premise that nonfiction books are read in parts was found to be true of two-thirds of all use.

The data on how patrons selected a particular nonfiction book provided an empirical model for grouping nonfiction book users into three groups: those with prior knowledge of the book (24.8%), those who selected the book at the library catalog (19.9%), and those who selected the book at the shelves (55.3%). The public library system in this study uses a DDC shelf arrangement, with the effect that books are in order by subject. In going directly to the shelves, browsers were actually using a subject approach for selecting a book. That 55.3% of the patrons were browsers suggests that electronic information systems should offer a subject approach. The findings also suggest that electronic information systems should allow rapid scanning and skipping through text in nonfiction books, whether for selecting a book or for finding specific information in a book.

A path analysis of the data grouped patrons according to a series of decisions they made in the information search process. This analysis revealed eight principal paths that patrons followed. These eight paths were taken by approximately 70% of the patrons and represent a legitimate empirical classification of nonfiction book users, who typically belong to one of the following groups: true browsers, information-seeking browsers, known-item users, and information-seeking catalog users.

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Notes about the Authors

Chandra Prabha is an Associate Research Scientist in the OCLC Office of Research. The research reported here was conducted during her term as a Postdoctoral Fellow in the Office of Research. Before joining OCLC, she conducted studies in the area of bibliometrics. She also did a need analysis study for establishing a documentation center for the subject of Agricultural Communication at the University of Illinois in Urbana. Her extensive library experience includes appointments at the University of Wisconsin-Madison, Milwaukee Public Library, International Crops Research Institute for Semiarid Tropics, University of Hyderabad, and the American Studies Research Centre. Dr. Prabha holds a B.Sc. in mathematics, physics, and chemistry from Osmania University (India), a B.S. in education from the University of Wisconsin, an M.S. in library science from the University of Wisconsin, and a Ph.D. in library and information science from the University of Illinois.

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Duane Rice is a Research Assistant in the Office of Research. He designed the Library Site Data forms, formatted the interview scripts on his Macintosh microcomputer, and paid meticulous attention to all aspects of data collection and data entry. Mr. Rice holds a B.S. in industrial design and is currently working on an M.A. at The Ohio State University.

1. Overview

This report examines two premises of information-seeking behavior associated with the use of nonfiction books in an electronic mode. The research was conducted in the context of a larger research effort--namely, as part of an effort to develop an electronic information system whose goal is to overcome some of the limitations of conventional methods of obtaining information.

Early electronic information systems have featured storage and retrieval of numerical or bibliographic data. More recently, however, these systems have featured storage and retrieval of full texts, for example, newspapers, journals, and reference books. Publications which are already available in electronic mode are natural candidates for inclusion in electronic information systems. Given the introduction of computers to publishing, nonfiction books will soon become available for use in electronic mode.

The use of computer typesetting in recent years in the publishing industry for producing books in conventional paper form has resulted in computer-readable tapes of these books. With some additional work, these tapes can become the basis for creating electronic information systems which can disseminate the actual contents of books, and not just bibliographic information. Since nonfiction books are largely informational, computer-readable tapes resulting from the production of nonfiction books in conventional paper form are a logical choice for adding to or creating an electronic information system.

Such an electronic information system which includes the full text of nonfiction books will be accessible by computer, possibly from many sites, including users' homes or offices. The objective of this electronic information system is to enable users to seek and find information directly, quickly, and easily, when and where they need it (Kilgour 1985).

Strictly speaking, the universe of nonfiction books includes books on any subject, dictionaries, telephone directories, handbooks, maps, and much more. Generally, in library environments, dictionaries, telephone directories, and similar materials are regarded as "reference" books and these books do not usually circulate. In contrast, libraries do permit their patrons to borrow nonfiction books, which treat any given subject in greater or less depth. Nonfiction books that circulate are not necessarily read completely, and "only a section, a chapter, or even, for specific purposes of information, a page may be read appropriately" (Berelson 1949). The present study focuses on nonfiction books that circulate, i.e., can be borrowed by patrons.

Two premises underlie the inclusion of nonfiction books in a full-text database which users can access electronically. A central premise is that nonfiction books are generally read or consulted for obtaining information or ideas (Kilgour 1985, 10-11). A related premise is that users of nonfiction books do not read all of a book, but read only parts of a book. Clearly, the premises that underlie the inclusion of these nonfiction books in electronic information

systems should be tested. Electronic information systems must accommodate the search techniques users are accustomed to.

This study examines the premises that books are consulted primarily for obtaining information and consequently tend to be consulted in parts. The study was designed to test these premises specifically with respect to the information-seeking behavior of public library patrons. In addition, this research sought data on the search techniques patrons employ for locating a book, and what features of a book are used for finding desired information within it.

As early as 1949, Berelson presented data on how much of a nonfiction book public library patrons read. Two other recent studies test whether nonfiction books are consulted in parts. The first (Sabine and Sabine 1985) was conducted in the United States during July-October 1985 and reported on how heavy users of different types of libraries (university, public, and special libraries) consult nonfiction books and journals. The second study, now in progress, is being conducted by the International Electronic Publishing Research Center in the United Kingdom to examine how library patrons use nonfiction books. While the objective of the present study remains essentially the same as the two recent studies, it differs significantly from them in methodology. The first study used telephone interviews, and the second is employing a self-administered questionnaire. In neither study were users randomly selected. In the present study, the users were selected at random. Also, this project's methodology is based on face-to-face interviews for collecting data; the previous studies have relied on less direct data-gathering techniques.

The study participants were randomly selected from a portion of the user population of the Public Library of Columbus and Franklin County. They were chosen from a group of patrons who had borrowed nonfiction books from any of the libraries of the metropolitan public library system.

The public library setting was chosen because it seemed reasonable to suppose that nonfiction books are less likely to be consulted in parts in a public library setting than in an academic or special library setting. Second, it seemed reasonable to suppose that books borrowed from the library are less likely to be consulted in parts than books consulted on the library premises. Third, the public library captures a wider spectrum of patrons than other types of libraries, making it less likely that the study hypotheses would be supported due to homogeneity among the study participants. Therefore, in selecting public library users who had borrowed nonfiction books, the premises that books are consulted primarily for obtaining information and consequently tend to be consulted in parts were examined under rigorous conditions.

2. Research Method

The methodology employed in this study is presented in this chapter. The selection of libraries, the design and development of a script for use in face-to-face interviews, the collection of library site data, the criteria used for allocating the 350 interviews proportionately among the libraries, and the procedure employed for randomizing library visits are described. This information is followed by descriptions of data entry, verification, and analyses. Finally, the assumptions and limitations which pertain to the methodology are stated.

2.1 Library Selection

The Public Library of Columbus and Franklin County was selected for this study. This metropolitan library serves its public from twenty sites. Five of these sites, consisting of four branch libraries and the Main Library, participated in the study. To select the branch libraries, the researchers first grouped the branches by the type of neighborhood they served. From each group, a representative branch was selected. The Reynoldsburg and the Dublin branches are in suburban neighborhoods, and the Driving Park branch is in an inner city neighborhood. The Northside branch represents a mixed neighborhood. The selection of libraries was non-random; it was based on such factors as availability. Table 1 presents the profiles of the participating libraries.

Table 1
Profiles of Participating Libraries

	Libraries					
Criteria	Main	Reynoldsburg	Dublin	Northside	Driving Park	All Libraries
Population served (1980)	16,055 (0.130)*	53,868 (0.438)	15,234 (0.124)	21,132 (0.172)	16,768 (0.136)	123,057 (1.000)
Registered borrowers	41,270 (0.451)	24,003 (0.262)	11,755 (0.128)	8,286 (0.090)	6,266 (0.068)	91,580 (0.999)
Circulation totals**	43,276 (0.401)	36,700 (0.340)	15,413 (0.143)	8,002 (0.074)	4,477 (0.042)	107,868 (1.000)
User visits***	46,006 (0.485)	21,735 (0.229)	13,311 (0.140)	8,111 (0.085)	5,719 (0.060)	94,882 (0.999)

*Numbers in parentheses are proportions of the total for each criterion. Due to rounding, some rows do not total 1.000.
**Average monthly circulation total for January-May 1985. For averaging, circulation total of just the first five months of 1985 were used because the data collection for this study was to take place during the same months in 1986.
***Average monthly user visits for January-May 1985.

2.2 Data Collection

The researchers chose a face-to-face interview method for collecting data because this method reduces misinterpretations of the survey questions by the respondent and the responses by the data collector. With each interviewee, the interviewer used a script (fig. 1) that was developed specifically for this study. During the interview, the patron was allowed to see the script as the interviewer read each question aloud. This approach, in addition to increasing the interviewee's attention, had the benefit of reducing the interviewing time. (For insertion in this paper, the interview script has been reduced to fit on two pages; however, the actual script used a large typeface and was seven pages long.)

In each of the five libraries, the interviewers stationed themselves where they could determine visually whether the incoming patron was an adult and whether the patron was returning any books. Each library had a specific area marked for book returns. The interviewers intercepted those adults who were approaching the book-return desk. Each patron was asked for permission to be interviewed. Patrons who consented were asked whether they were returning books for themselves. Those who answered "yes" were asked whether they were returning any nonfiction books. Only those who answered "yes" to both of these screening questions became subjects of this study.

Whenever a subject returned more than one book, the subject was asked to select the nonfiction book he or she remembered using best. After the subject selected a book, the interviewer asked questions about the use of that book. This method of selecting a particular book is a variant of the critical incident method, and is likely to produce data that are more reliable than asking questions about the use of any nonfiction book (Martyn and Lancaster 1981).

2.3 Script (Instrument) Design

The data collection instrument contained twenty-nine questions which can be grouped into eight sets:

- The first set (questions 1 and 2) screened users for the study.
- The second set (question 3 and, when appropriate, the accompanying request "please select one nonfiction book that you remember best") facilitated the employment of the critical incident method which was referred to above.
- The third set (questions 4 and 5) obtained data on the subject content of the book. The responses to question 4 obtained data on the subject content in the patrons' own words; the responses to question 5 described the subject content of the books in terms of the Dewey Decimal Classification scheme.
- The fourth set (questions 6 to 9) asked about how patrons selected a particular book.

Book-Use Survey — A Script for a Personal Interview

Interviewer CP DAR JB Date ___/___

Library DrPk Dubn Main Nors Reyn
P NP

Time ___:___ Sex M F

We are conducting a survey to learn how people use books for getting information. (Think of "information" as one or more ideas or facts.)

Could you please take a few minutes to answer some questions?

1 Are you returning the book(s) for yourself? Yes ☐ No ☐ ●

2 Are you returning any nonfiction? (nonfiction contains factual information) Yes ☐ No ☐ ●

3 How many nonfiction books? ___

(Please select one nonfiction book that you remember best.)

4 What is this book about? _____

5 (book call number) _____

6 You decided to borrow this book because you

had prior knowledge of this book ☐ ☑10

(describe) _____

selected it using the library catalog ☐ ⬇7

selected it from the shelves ☐ ⬇8

7 Did any of the following help you decide that you wanted this book?

author's name ☐ ☑10

title of the book ☐ ☑10

other ☐ ☑10

(describe) _____

8 How did you know which shelves to go to? ✓✓✓

used the library catalog ☐

knew from previous visits ☐

asked the library staff ☐

other ☐

(describe) _____

9 Which of the following helped you select this book? ✓✓✓

(descriptions on the front or back covers) blurbs on the cover ☐

skimming the pages ☐

table of contents ☐

book index ☐

pictures or illustrations ☐

author's name ☐

title of the book ☐

10 Can you tell me why you borrowed this book?

_____

_____

11 Is this book for ✓✓✓

school ☐

business ☐

home ☐

personal ☐

12 Were you looking for any specific information?

Yes ☐

(describe) _____

No ☐ ☑14

13 To find the specific information, did you look at the ✓✓✓

table of contents ☐

book index ☐

preface ☐

tables, charts, and diagrams ☐

photographs or sketches ☐

entire book ☐

other ☐

(describe) _____

14 Did you read

none of the book ☐ ⬇15

less than 1/4 ☐ ⬇16

about 1/4 ☐ ⬇16

about 1/2 ☐ ⬇16

about 3/4 ☐ ⬇16

almost all ☐ ⬇17

all of the book ☐ ⬇17

15 You did not read this book because

_____

_____ ☑☑22

16 You decided not to read the rest of the book because

_____

_____

17 Did you find the information you were looking for?

Yes ☐

No, wasn't in this book ☐ ☑☑22

No, wasn't looking for information ☐ ☑☑22

Fig. 1. Interview script

18 Most of the information you wanted was

- in one section of the book ☐
- in a few sections of the book ☐
- in several sections of the book ☐
- in many sections of the book ☐
- in all sections of the book ☐

19 How important is this information?

- very important ☐
- somewhat important ☐
- not that important ☐
- not important at all ☐

20 Do you have any specific use(s) for this information?

Yes ☐

(describe) _____

No ☐ ☑22

21 When do you expect to use this information?

- have used already ☐
- within a week ☐
- a month ☐
- six months ☐
- a year ☐
- perhaps never ☐

22 How often do you go to a library?

- a few times a week ☐
- once a week ☐
- twice a month ☐
- once a month ☐
- once in six months ☐
- once a year ☐
- less than once a year ☐

23 How often do you borrow nonfiction?

- a few times a week ☐
- once a week ☐
- twice a month ☐
- once a month ☐
- once in six months ☐
- once a year ☐
- less than once a year ☐

24 Have you ever used a computer?

Yes ☐
No ☐ ☑26

25 Do you have a personal computer at home?

Yes ☐
No ☐

26 Please select your age group

- under 20 ☐
- 20 - 24 ☐
- 25 - 34 ☐
- 35 - 44 ☐
- 45 - 54 ☐
- 55 - 64 ☐
- over 65 ☐

27 Which describes your level of education?

- elementary ☐
- some high school ☐
- graduated from high school ☐
- some college ☐
- graduated from college ☐
- graduate school or professional degree ☐

28 Are you employed

- full time ☐
- part time ☐
- not employed ☐

29 Into which group does your household income fall?

- under $10,000 ☐
- $10,001 - $20,000 ☐
- $20,001 - $30,000 ☐
- $30,001 - $40,000 ☐
- $40,001 - $50,000 ☐
- $50,001 - $60,000 ☐
- over $60,000 ☐

Thank you very much for answering our questions

Fig. 1. Interview script (continued)

- The fifth set (questions 10, 11, 19, 20, 21) pertained to factors that could influence how much of a book is read, including why the patron was seeking information, whether the patron was looking for specific information, whether the patron had a specific use for the information, how soon and in what context (e.g., home or work) the patron planned to use the information, and perceptions of the importance of the information.

- The sixth set (questions 12 and 14 to 18) addressed the premises central to the study--whether patrons read nonfiction books specifically for information and how much of a nonfiction book patrons read. The sixth set inquired about reasons for not reading the entire book, whether the patron found the desired information, and whether this information was in one section or more than one section of the book.

- The seventh set (question 13) inquired what features were used for finding specific information in a book.

- The eighth and final set (questions 22 to 29) dealt with patron profile and included questions on frequency of library visits and frequency of nonfiction borrowing.

The instrument sought much information on factors which might influence how much of a book patrons read. The objective was to explore whether any of these factors affect the amount of a nonfiction book patrons read.

2.4 Library Site Data Form

A Library Site Data Form for each of the libraries (fig. 2) was designed to provide important background data. On each library visit, data were collected on the following: date; name of library; name(s) of interviewers; peak or nonpeak circulation periods; beginning and ending time of library visit; number of persons entering the library (electronic counters mounted on the entrance door provided this number); number of persons missed (that is, persons who were apparently returning books but were not approached for interviews); and the number of persons who refused to participate.

Researchers collected data on the number of persons missed or refused as part of the usual survey sampling process. (That is, if one makes an estimate that, for instance, 50% of the population are heavy users--in contrast to light users--of libraries within some confidence bounds, then an estimate of nonresponse bias in the data can be obtained by supposing that all the persons who were missed or refused are heavy users--or alternatively light users--of libraries.) In addition, miss and refusal data could indicate whether these rates are related to the amount of traffic in the library.

2.5 Pretest

Earlier versions of the interview script were tested during the period December 6, 1985, to February 14, 1986. All five libraries participated in this phase of

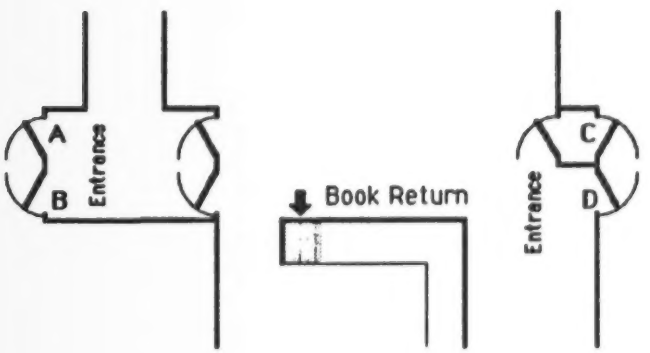
Book-Use Survey — Site Data Form

Library - Reyn P NP — Interviewer(s) CP DAR JB — Date ___ /___

Begin Time ____ : ____

End Time ____ : ____

	tally	number
Refusals		
Number Missed		



	end		begin		
A		-		=	
B		-		=	
C		-		=	
D		-		=	
					+2
Number of Persons					

Notes:

Not Returning for Self ____

Not Nonfiction Books ____

Full Interviews ____

Sequence Numbers ____ - ____

Fig. 2. Example of Library Site Data Form

the study. The script was revised as many times as necessary and each revision was tested again. When suggestions for refinements became negligible, no more patrons were interviewed.

The pretest produced a script that was tailored specifically for this study. In addition, it allowed the researchers to get acquainted with the population that was to be surveyed, to become familiar with the physical setting of each participating library, and to build rapport with the staff in these libraries. Also, during the pretest the researchers critiqued each other's interviewing styles and gained some experience.

2.6 Full Study

As stated before, the participating libraries were selected to represent the type of neighborhood served. They were not selected randomly. Due to restrictions of time and resources, a sample size of 350 interviews was chosen.

2.6.1 Sampling Scheme

These 350 interviews were allocated among the participating libraries in proportion to their relative size. The researchers preferred stratified proportional sampling to simple random sampling, because the size of the participating libraries varied widely. Appendix A provides details on the sampling and statistical methods employed.

To determine the relative size of each of the libraries, the following criteria were considered: number of residents in the library's service area, number of registered borrowers, circulation totals, and user visit totals (see table 1). The relative size of the Main Library, based on the number of residents in its service area, was much lower than its relative size based on other criteria. Given the focus of this study, just two criteria, namely, the number of registered borrowers and circulation totals, were selected.

Circulation totals included figures for fiction and other types of library materials (for instance, video cassettes). This research focuses on nonfiction book use. Therefore, library managers were asked to estimate what proportion of total circulation reflected nonfiction book borrowing (see table 2, row 1). These estimates were used to weight circulation totals (row 3). The average of the weighted circulation totals and the number of registered borrowers gave an estimate of the relative size of each participating library (see table 3, row 3).

The next step called for randomizing the hours of interviewing in each of the libraries. Peak periods of library activity include lunch hour and after work traffic. It is possible that the population of patrons who visit the library during peak periods have different characteristics than the population of patrons who visit the library during nonpeak periods. Therefore, for each library, peak and nonpeak periods of library material returns were identified, then the proportion of returns for peak and nonpeak periods were calculated, and finally these proportions were used to determine the number of interviews required for peak and nonpeak periods.

Table 2
Proportion of Total Circulation Reflecting Nonfiction Borrowing

Criteria	Libraries: Main	Reynolds-burg	Dublin	North-side	Driving Park	All Libraries
Percentage of circulation reflecting nonfiction borrowing at this library*	55%	50%	60%	33%	15%	---
Proportion of circulation accounted for by this library**	0.401	0.340	0.143	0.074	0.042	1.000
Proportion of circulation weighted by percentage of nonfiction borrowing	0.435	0.335	0.169	0.049	0.012	1.000

* As estimated by librarians at each library (as of February 1, 1986).
**From table 1; figures based on average monthly circulation totals for January-May, 1985.
***(Row 1 x row 2)/(sum over all libraries of (row 1 x row 2))

Example: For the Main library, (0.55 x 0.401)/(0.55 x 0.401) + (0.50 x 0.340) + (0.60 x 0.143) + (0.33 x 0.074) + (0.15) x 0.042)= 0.435

Table 3
Relative Sizes of Libraries Based on Circulation and Borrowers

Criteria	Libraries: Main	Reynolds-burg	Dublin	North-side	Driving Park	All Libraries
Proportion of circulation weighted by percent of nonfiction borrowing*	.435	.335	.169	.049	.012	1.000
Proportion of registered borrowers accounted for by this library**	.451	.262	.128	.090	.068	.999
Calculation of relative size of this library***	.443	.298	.148	.070	.040	.999

*From table 2
**From table 1
***Average of row 1 and row 2

To identify peak and nonpeak periods for each of the five libraries, the researchers obtained data that gave the number of items returned during each hour (open to the public) of each day for one calendar month. (These data were not available for a longer period. Furthermore, return subtotals for nonfiction, the focus of this study, were not available.) The number of returns for each Monday was summed. Similarly, the number of returns on Tuesdays, Wednesdays, Thursdays, Fridays, and Saturdays of the month were summed. All five libraries were closed on Sundays. Finally, the three days of the week which had the highest number of returns were marked as peak days, the remaining three days were marked as nonpeak days.

The researchers determined how many interviews were needed from each library based on two factors--the library's relative size and the proportion of items returned during peak and nonpeak periods at that library. Table 4 provides data on the proportion of items returned during peak and nonpeak periods for each of the five libraries. These proportions were multiplied by the library size (table 5, row 3 and row 6). These weighted proportions gave the number of interviews needed for peak and nonpeak periods at each library (table 5, row 4 and row 7).

For example, in the case of the Main Library, its relative size was found to be 0.443 (table 5, row 1). The Main Library's peak proportion of library materials returns, 0.565, multiplied by its size, 0.443, gave the library's peak proportion weighted by its size--in this case, 0.250. This weighted proportion, 0.250, multiplied by the total number of interviews, 350, gave a requirement of 88 interviews for the peak period at the Main Library (table 5, row 4).

Summing up, the total number of 350 interviews was allocated proportionately among the libraries. The relative size of each library was determined based on circulation total weighted for nonfiction book circulation and the number of registered borrowers. Next, for each of the five libraries, peak and nonpeak periods of library materials returns were identified, and the proportions of materials returned during these periods were calculated. Using these proportions, the numbers of interviews for peak and nonpeak periods were then determined.

2.6.2 Randomization of Library Visits

Pretest experience indicated that a period of twelve weeks or fewer would suffice to conduct the 350 interviews.

To recall, each library had three peak days and three nonpeak days. Each library was assigned two visits per week, one visit during a peak day and another during a nonpeak day.

Although all five libraries were open to the public six days a week, the open hours of the libraries varied from weekday to weekday. These variations in open hours required additional calculations to randomize the library visits.

For each library, its open hours for that day were divided into time periods or "slots." For a given day, the number of open hours determined whether the day was divided into four slots of three hours each, or two slots of four hours and one slot of three hours, or two slots of four hours each.

Table 4
Proportions of Library Material Returns during Peak and Nonpeak Periods

	Libraries				
	Main	Reynoldsburg	Dublin	Northside	Driving Park
Peak period:					
Peak days for this library	Monday Wednesday Saturday	Monday Thursday Saturday	Wednesday Friday Saturday	Tuesday Wednesday Saturday	Monday Thursday Saturday
Proportion of returns in peak period	.565	.623	.600	.585	.680
Nonpeak period:					
Nonpeak days for this library	Tuesday Thursday Friday	Tuesday Wednesday Friday	Monday Tuesday Thursday	Monday Thursday Friday	Tuesday Wednesday Friday
Proportion of returns in nonpeak period	.435	.377	.400	.415	.320
	1.000	1.000	1.000	1.000	1.000

Table 5
Number of Interviews Allocated to Peak and Nonpeak Periods for the Five Libraries

	Libraries					
	Main	Reynolds-burg	Dublin	North-side	Driving Park	All Libraries
Relative size of this library*	0.443	0.298	0.148	0.070	0.040	0.999
Total number of interviews required at this library	156	104	52	24	14	350
Peak period:						
Proportion of returns during peak period**	0.565	0.623	0.600	0.585	0.680	-----
Proportion weighted by relative size***	0.250	0.186	0.089	0.041	0.027	-----
Number of interviews required during peak period****	88	65	31	14	9	-----
Nonpeak period:						
Proportion of returns during nonpeak period	0.435	0.377	0.400	0.415	0.320	-----
Proportion weighted by relative size	0.193	0.112	0.059	0.029	0.013	-----
Number of interviews required during nonpeak period	68	39	21	10	5	-----

*From table 3
**From table 4
***Proportion of returns during this period multiplied by the relative size of this library
****Total number of interviews required (350) multiplied by proportion of returns weighted by relative size of this library

The algorithm used to randomize the library visits follows. Visits were scheduled based on this algorithm for randomly selecting time slots during the twelve week period between February 10 and May 3, 1986. The resulting set of time slots became the interviewing schedule.

```
Select first week

     Select a library
          Select peak days
               Select a random peak day
                    Select a random slot for this day
                         If available this week then schedule
                         If unavailable this week then schedule in the 1st
                         available week
                         If unavailable any week then do not schedule

          Select nonpeak days
               Select a random nonpeak day
                    Select a random slot for this day
                         If available this week then schedule
                         If unavailable this week then schedule in the 1st
                         available week
                         If unavailable any week then do not schedule

     Select another library (without replacement)
          Repeat previous steps until all five libraries are scheduled

Select another week
     Repeat previous steps until all twelve weeks are scheduled
```

The estimated amount of traffic at each of the libraries and the type of slot, peak or nonpeak, determined the number of interviewers required for each library visit. For some of the library visits, one of the assigned interviewers could not be present. In such instances, a research assistant, normally not part of the research team, was recruited to keep track of missed interviews and other information. In a few instances, when the requisite number of interviewers were not available and it was impossible to obtain a person to collect data on missed interviews and other information, the visits were canceled.

2.6.3 Data Entry, Data Verification

All of the data from the 350 interviews, including verbal responses to open-ended questions, were entered on an IBM 4381 using appropriate programs from the SAS package, version 5.08. A list of the data as entered on the computer was compared visually to the responses recorded on the data collection forms. This visual checking was necessary to recognize whether the errors occurred in data entry or data recording. Data entry errors were negligible. The visual checking disqualified three responses because the responses were either incomplete or incoherent. A final set of data from 347 interviews was used in subsequent analyses.

All verbal responses to each of the open-ended questions were printed out under each question. This grouping made it easier to recognize similar responses and facilitated coding. These codes were then added to the main data set.

Other data, such as the number of visitors entering the library and the number of persons refusing to participate in the survey, were entered on a Lotus 1-2-3 spread sheet and analyzed separately.

2.6.4 Data Analyses

Most of the analyses were performed on an IBM 4381 using appropriate programs from the SAS package, version 5.08. Although most of the findings are presented in plain percentages, analyses of the questions were not straightforward because the data collectors asked several types of questions: some permitted just one answer, some allowed multiple answers, and some were open-ended.

Of the interview questions which allowed multiple answers, questions 8 and 11 permitted 16 possible combinations of answers each; questions 9 and 13 allowed 128 possible combinations of answers each. However, only 5 and 12 combinations of answers to questions 8 and 11 actually occurred in the study, and only 40 and 25 combinations of answers to questions 9 and 13 actually occurred. The researchers calculated the percentages of occurrence of each combination of answers.

While the filtering questions were useful for handling some of the anticipated contingencies, subsequent branching and skipping through the interview questions resulted in numerous "paths" which were taken through the interview. The fifty-four possible paths arising from four questions (questions 6, 12, 14, and 17) are discussed in the next chapter in a section entitled "Path Analysis" (section 4.2).

2.7 Assumptions and Limitations of the Study

It was assumed that library patrons make some use of the information obtained from the nonfiction books. Evidence of such use can be an explicit activity, as in the case of trying a cake recipe or preparing a resume. However, use of information is sometimes implicit; for instance, when a patron uses information to reorganize, to reinforce, or to learn an idea or a fact, the activity or "use" of the information is mental.

The findings will be applicable to **use patterns for nonfiction books** borrowed by **public library patrons.** Academic, special, or school library patrons may show different patterns of use. Similarly, books owned or borrowed from non-library sources may be used differently than books borrowed from a library. Some users (for instance, students of literature) may use books of fiction in the same way they use nonfiction, but fiction books are excluded from consideration in this study.

3. Findings I: Premises of Electronic Information Systems

This chapter begins with the description of the selection of patrons and the demographic characteristics of participants. Findings pertaining to the premises underlying the inclusion of nonfiction books in a full-text database follow. Subsequent sections discuss patrons' reasons for reading just parts of a book, patrons' success in finding the wanted information, and the extent of scatter of the wanted information throughout a book. This is followed by analyses concerning the features of a book patrons use for finding specific information and factors which may affect the amount of a nonfiction book patrons read.

3.1 Selection of Patrons

As noted earlier, the data for this study were collected at four branch libraries and the Main Library of the Public Library of Columbus and Franklin County during the period February 18 to March 25, 1986. Of the 675 persons who consented to participate in the study, 52% were eligible for interviewing (see table 6). To recall, to qualify for interviewing, the consenting patron had to be returning a nonfiction book for himself or herself, not for a family member or a friend. Patrons who answered "no" to question 1 ("Are you returning the book(s) for yourself?") or to question 2 ("Are you returning any nonfiction?") became ineligible to participate in the study.

In 1949, Berelson observed that more men than women borrow nonfiction from public libraries. Findings of this study indicate this trend is still true in 1986 (table 7). The percentage of females who were disqualified from participation in the study because they were not returning nonfiction (40.3%) is twice that of males (19.4%). Also, more females (24.3%) than males (14.8%) were disqualified because they were returning books for others.

Table 8 reconfirms that more females (64.6%) than males (34.2%) were disqualified. However, in the final study, more females (53.6%) participated than males (45.5%), because, overall, more females (59%) than males (40%) were returning books (see table 6).

Eligible patrons who returned more than one nonfiction book were asked to select a book that they remembered using best. While 64% of the patrons returned more than one nonfiction book, more than half of this group returned no more than two or three books. Patrons returned an average of 2.83 books each (table 9).

Table 6
Percentage of Eligible Patrons

Criteria	Libraries: Main	Reynolds-burg	Dublin	North-side	Driving Park	All Patrons
No. of persons who consented to participate	232	235	138	39	31	675
Males	(59.5%)	(32.0%)	(24.6%)	(48.7%)	(12.9%)	(40.0%)
Females	(40.1%)	(66.8%)	(73.9%)	(48.7%)	(87.0%)	(59.0%)
Not Recorded	(0.4%)	(1.3%)	(1.4%)	(2.5%)	---	(1.0%)
	(100.0%)	(100.1%)	(99.9%)	(99.9%)	(99.9%)	(100.0%)
No. of persons who completed the interview*	156 (67%)**	104 (44%)	52 (38%)	24 (62%)	14 (45%)	350 (52%)

*See table 8 for gender distribution of persons who completed the interview.
**These figures are percentages of the total number of persons who consented to participate.

Table 7
Gender Distribution of Disqualified Subjects and Reason for Disqualification

	Libraries: Main n=76 %	Reynolds-burg n=131 %	Dublin n=86 %	North-side n=15 %	Driving Park n=17 %	All Patrons N=325 %
Not returning books for self						
Males	22.4	13.7	10.5	26.7	0.0	14.8
Females	17.1	25.2	27.9	13.3	41.2	24.3
Gender not recorded	--	--	--	6.7	--	0.3
Total	39.5	38.9	38.4	46.7	41.2	39.4
Not returning nonfiction						
Males	39.5	16.0	10.5	13.3	5.9	19.4
Females	21.1	44.3	48.8	40.0	52.9	40.3
Gender not recorded	--	0.8	2.3	--	--	0.9
Total	60.6	61.1	61.6	53.3	58.8	60.6

Table 8
Gender Distribution of Eligible and Noneligible Participants

Criteria	Libraries: Main %	Reynolds-burg %	Dublin %	North-side %	Driving Park %	All Patrons %
Persons who completed the interview	n=154	n=104	n=51	n=24	n=14	N=347
Males	58.4	34.6	31.4	54.2	21.4	45.5
Females	40.9	63.5	68.6	45.8	78.6	53.6
Gender not recorded	0.7	1.9	--	--	--	0.9
	100.0	100.0	100.0	100.0	100.0	100.0
Persons who were not eligible	n=76	n=131	n=86	n=15	n=17	N=325
Males	61.8	29.8	20.9	40.0	5.9	34.2
Females	38.2	69.5	76.7	53.3	94.1	64.6
Gender not recorded	--	0.7	2.4	7.7	--	1.2
	100.0	100.0	100.0	101.0	100.0	100.0

Table 9
Number of Nonfiction Books Patrons Returned

Number	Libraries: Main	Reynolds-burg	Dublin	North-side	Driving Park	All Patrons
Total number of books returned	432	309	141	70	29	981
Average number of books returned by each patron	2.80	2.97	2.76	2.92	2.07	2.83

Following the screening process, 351 adults, only 4.9% (less than one-twentieth of all those who entered the library) qualified for full interviews. This percentage is low for several reasons (fig. 3). First of all, only 14.2% of those entering the library building were returning books. Of this group, 15% were missed (interviewers were busy interviewing). Another 21.1% refused to participate in the study. Of those who consented, 18.9% were not returning books for themselves. Finally, 35.9% of those who were returning books for themselves had no nonfiction.

Although only 4.9% of the patrons entering the library qualified for full interviews, this group of patrons were heavy users of libraries. An impressive 96.6% of the interviewees said they visited the library at least once a month, and 88.1% said they borrowed nonfiction books at least once a month (see table 10).

These data confirm Berelson's observation that book borrowing in a public library is concentrated in a small group. Berelson found that 5% of the total annual borrowers account for about 40% of the circulation (Berelson 1949).

3.1.1 Participant Profile

Interview questions 26 through 29 collected demographic information on the study participants. As indicated by the findings presented in table 11, a typical nonfiction book borrower at a public library is:

female (with 53.6% chance), or
between 25 and 44 years old (with 60.8% chance), or
at least partially college-educated (with 82.1% chance), or
employed full-time (with 51.6% chance), or
in the household income range $20,000-$40,000 (with 42.8% chance).

It was noted earlier that the number of men who were disqualified because they were not returning any nonfiction books was less than half the number of women who were disqualified for this reason (table 7). Thus, one would expect that a typical nonfiction book borrower would be male (with a chance of greater than 50%). However, 53.6% of the nonfiction borrowers in this study were female, not male. This is explained by the fact that proportionately more women than men use branch libraries (table 11). This fact affects the percentage for all patrons. In reporting the findings of studies conducted in the public library setting, it becomes important, then, to distinguish the characteristics of the patrons of the Main Library from those of the branch libraries.

Zweizig and Dervin (1977) pointed out that nearly all user studies gather demographic information. The present study pertains only to the nonfiction book borrower, not to all library users. Thus, demographic information of this study will not be compared with that of previous studies which focus on demographic information of all library patrons.

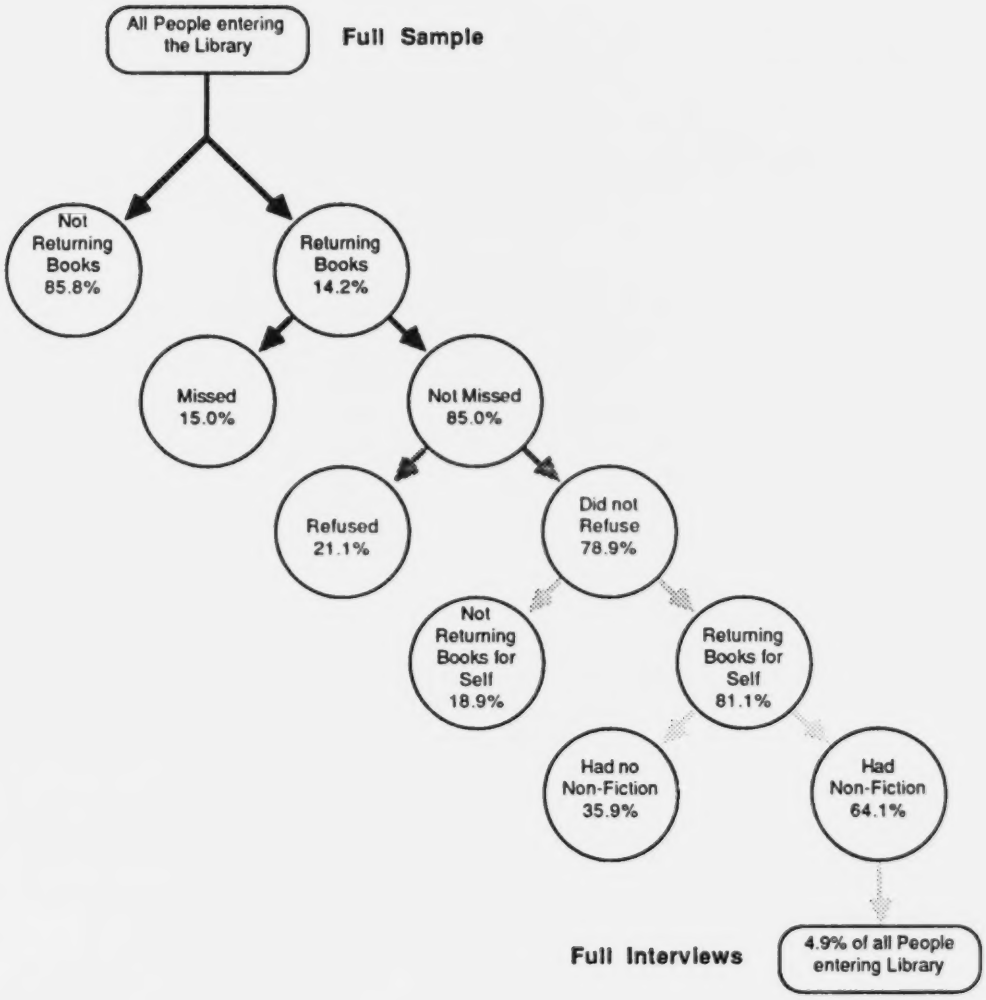


Fig. 3. Sampling tree

Table 10
Frequency of Library Visits and Nonfiction Borrowing

User/Subject Characteristics	Libraries: Main	Reynoldsburg	Dublin	Northside	Driving Park	All Patrons
	%	%	%	%	%	%
Frequency of library visits	n=154	n=104	n=51	n=24	n=14	N=347
A few times a week	26.6	19.2	5.9	25.0	14.3	20.7
Once a week	28.6	23.1	39.2	41.7	28.6	29.4
Twice a month	28.6	26.9	33.3	20.8	35.7	28.5
Once a month	12.3	28.8	21.6	12.5	21.4	19.0
Once in six months	1.9	1.9	none	none	none	1.4
Once a year	0.6	none	none	none	none	0.3
Less than once a year	1.3	none	none	none	none	0.6
	99.9	99.9	100.0	100.0	100.0	99.9
Frequency of nonfiction borrowing	n=154	n=103	n=51	n=24	n=14	N=346
A few times a week	10.4	10.7	3.9	12.5	7.1	9.5
Once a week	24.0	11.7	25.5	33.3	21.4	21.1
Twice a month	31.2	22.3	27.5	29.2	42.9	28.3
Once a month	26.0	39.8	29.4	12.5	21.4	29.5
Once in six months	4.5	15.5	13.7	8.3	7.1	9.5
Once a year	1.3	none	none	none	none	0.6
Less than once a year	2.6	none	none	4.2	none	1.4
	100.0	100.0	100.0	100.0	99.9	99.9

Table 11
Profile of Nonfiction Borrowers at the Public Library of Columbus and Franklin County

User/Subject Characteristics	Libraries: Main n=154 %	Reynoldsburg n=104 %	Dublin n=51 %	Northside n=24 %	Driving Park n=14 %	All Patrons N=347 %
Sex						
Male	58.4	34.6	31.4	54.2	21.4	45.5
Female	40.9	63.5	68.6	45.8	78.6	53.6
Not recorded	0.6	1.9	--	--	--	0.9
	99.9	100.0	100.0	100.0	100.0	100.0
Age						
Under 20	3.9	5.8	7.8	8.3	7.1	5.5
20 - 24	18.2	8.7	3.9	16.7	14.3	13.0
25 - 34	37.0	20.2	25.5	37.5	42.9	30.5
35 - 44	22.1	40.4	47.1	8.3	21.4	30.3
45 - 54	8.4	9.6	7.8	16.7	7.1	9.2
55 - 64	6.5	9.6	5.9	12.5	none	7.5
Over 65	3.9	5.8	2.0	none	7.1	4.0
	100.0	100.1	100.0	100.0	99.9	100.0
Education						
Elementary	none	1.0	none	none	none	0.3
Some high school	1.9	6.7	5.9	16.7	14.3	5.5
High school graduate	7.1	15.4	11.8	16.7	35.7	12.1
Some college	31.8	29.8	23.5	12.5	21.4	28.2
College graduate	29.9	29.8	37.3	41.7	14.3	31.1
Graduate school or professional degree	29.2	17.3	21.6	12.5	14.3	22.8
	99.9	100.0	100.1	100.1	100.0	100.0
Employment						
Full-time	56.5	42.3	51.0	58.3	57.1	51.6
Part-time	17.5	14.4	13.7	16.7	7.1	15.6
Not employed or retired	26.0	43.3	35.3	25.0	35.7	32.9
	100.0	100.0	100.0	100.0	99.9	100.1
Income*	n=144	n=96	n=47	n=22	n=11	N=320
Under $10,000	15.3	1.0	4.3	27.3	18.2	10.3
10,000 - 20,000	21.5	13.5	8.5	40.9	36.4	19.1
20,000 - 30,000	22.2	25.0	10.6	9.1	27.3	20.6
30,000 - 40,000	19.4	30.2	21.3	13.6	9.1	22.2
40,000 - 50,000	9.7	20.8	10.6	9.1	none	12.8
50,000 - 60,000	4.2	5.2	17.0	none	9.1	6.3
Over 60,000	7.6	4.2	27.7	none	none	8.7
	99.9	99.9	100.0	100.0	100.1	100.0

*Some respondents refused to answer the question about income.

3.2 Premises of Electronic Information Systems

The findings pertaining to the premises that nonfiction books are read primarily for obtaining information and consequently tend to be read in parts, not completely, are presented in this section. This section also includes patrons' reasons for reading just parts of books.

3.2.1 Premise One: Nonfiction Books Are Read Generally for Obtaining Information

For reading texts of extensive length, books in paper form are convenient. Given the state-of-the-art technology of electronic information systems, at least in the near future, it appears that books in paper form might be preferred over books in electronic mode for any extended or leisurely reading of text. On the other hand, books which are consulted or read in parts or short sections and consequently read for a short duration may lend themselves to use in electronic mode. What factors could help determine whether nonfiction books are read in parts, and not completely? Perhaps nonfiction books which are read for obtaining specific information are read just in parts, not in their entirety. Therefore, a question that is central to this study, and in turn, to designers of systems which would provide books in electronic mode, is whether nonfiction books are consulted mainly for specific information.

When patrons were asked whether they were seeking specific information (question 12), 152 of the total 347 patrons, 43.8%, answered "yes" (see table 12). The percentage of those who were looking for specific information was higher at the Main Library than in the branch libraries. The percentage of patrons who were looking for specific information during peak periods is only 5% higher than the percentage of patrons who were looking for specific information during nonpeak periods.

Although 43.8% of patrons said they were looking for specific information in the nonfiction books they borrowed, researchers' analyses of the verbal responses to open-ended questions on reasons for borrowing (question 10) and nature of use (question 20) indicated that, in fact, 55.9% of the patrons were looking for specific information, and that another 35.4% were looking for information in roughly defined areas. <u>These data support a fundamental premise of electronic information systems, that patrons read or consult nonfiction books mainly for obtaining information</u>.

3.2.2 Premise Two: Nonfiction Books Are Generally Read In Parts, Not Completely

Another question central to this study and of concern to designers of electronic information systems is how much of a nonfiction book do patrons read (question 14). If the majority of patrons read just parts or sections of nonfiction books, then the electronic medium becomes an attractive choice for disseminating information contained in nonfiction books. Responses indicate that 25.3% read one-fourth or less of the book, 26.8% read half or three-fourths of the book, 13.8% read almost all of the book, and 34% read all of the book (see table 13 and appendix B, table 1, which reports results for each branch library). Patrons of the Main Library were less likely than the patrons of the branch libraries to have read all of the book.

Table 12
Premise One: Nonfiction Books Are Used for Obtaining Information

Interview Question 12: Were you looking for any specific information?

Answers	Main Library n=154 %	Branches n=193 %	Peak Period n=205 %	Nonpeak Period n=142 %	All Patrons N=347 %
Yes	50.0	39.0	45.9	40.8	43.8
No	50.0	61.0	54.1	59.2	56.2
	100.0	100.0	100.0	100.0	100.0

Table 13
Premise Two: Nonfiction Books Are Read in Parts, Not Completely

Interview Question 14: Did you read ...

Amount read	Main Library n=154 %	Branches n=193 %	Peak Period n=205 %	Nonpeak Period n=142 %	All Patrons N=347 %
None of the book	3.2	1.6	2.0	2.8	2.3
Less than 1/4 of book	16.2	7.3	12.2	9.9	11.2
About 1/4 of the book	12.3	11.4	12.2	11.3	11.8
About 1/2 of the book	12.3	20.2	16.1	17.6	16.7
About 3/4 of the book	10.4	9.8	10.2	9.9	10.1
Almost all of the book	16.9	11.4	12.2	16.2	13.8
All of the book	28.6	38.3	35.1	32.4	34.0
	99.9	100.0	100.0	100.1	99.9

In his synthesis of the findings of many public library studies, Berelson included data from studies on how much of a nonfiction book patrons read. Dick and Berelson found in their study that 37% of patrons read less than half of a nonfiction book, while Pulling noted that 24% read less than half of a nonfiction book. A more detailed comparison of the findings of these studies with the present study poses a problem, because each of these studies divided the book differently. In a more recent study, Sabine and Sabine (1985) noted

that 36% of the public library patrons read nonfiction completely. However, the Sabines' study included journal literature. Furthermore, their study was not restricted to nonfiction borrowed for use. It was suggested earlier that books that are borrowed for use are likely to be used more extensively than books consulted on the library premises. Nevertheless, the present study found that only 34%, about a third of the patrons, read all of the book; the other two-thirds read part of the book.

3.2.3 Reasons For Reading Just Parts of a Book

Patrons' reasons for reading just parts of nonfiction books (question 16) are shown in table 14. Of those who read three-fourths or less of a nonfiction book, 5.7% stated explicitly that they were looking for specific information. Such responses as "was not pertinent" and "didn't have what I needed" indicate that 75% of this group consciously decided to read only what was perceived as relevant.

Table 14
Patrons' Reasons for Reading Just Parts of Nonfiction Books

Reason	Percent n=174	Cumulative Percent
Did not need...	23.6	23.6
Was not pertinent...	21.3	44.9
Found what I wanted...	9.8	54.7
Ran out of time	9.2	63.9
Ran out of time, renewing	8.6	72.5
Looked for just specific information	5.7	78.2
Ran out of time, book was due	5.2	83.4
Didn't have what I needed	2.9	86.3
Skimmed the rest...	2.3	88.6
Already knew information in the rest	2.3	90.9
Interested in pictures, illustrations	2.3	93.2
Did not like	1.7	94.9
Am reading other books	1.7	96.6
Other	2.9	99.5
Researchers failed to collect data	0.6	100.1

Eight of the patrons stated that they did not read the book. Responding to question 15 on the reasons for not reading the book at all, three of these patrons said that they were interested mainly in the pictures. Clearly, these patrons did not interpret obtaining information from pictures or illustrations as reading. Of the remaining five patrons, three did not find the information they wanted, and two did not have time to read the book.

3.3 Patrons' Success in Finding Information

Answers to question 17 ("Did you find the information you were looking for?") showed that 84.4% of the patrons claimed to have found the information (see table 15 and appendix B, table 2). Given this success rate, nonfiction books are clearly an important source for finding information. It is worth noting that in the branch libraries a higher percentage of patrons stated that they were not looking for information. Also, in a comparison of patrons who came to the library during peak and nonpeak periods, a greater percentage of patrons who came during nonpeak periods found the information they sought.

Table 15
Patrons' Success in Finding Information

Interview Question 17: Did you find the information you were looking for?

Answers	Main Library n=149 %	Branches n=190 %	Peak Period n=201 %	Nonpeak Period n=138 %	All Patrons N=339 %
Yes	89.9	80.0	81.1	89.1	84.4
No, wasn't in this book	4.7	3.2	5.5	1.4	3.8
No, wasn't looking for information	5.4	16.8	13.4	9.4	11.8
	100.0	100.0	100.0	99.9	100.0

3.4 Extent of Scatter of Wanted Information

The extent of scatter of the desired information throughout the book has implications for electronic information systems, especially for indicating the level of indexing which would be beneficial and for offering guidance to designers considering offering variable speeds for scanning text.

While table 16 presents the overall percentages of scatter of desired information in the book, table 17 shows the relationship among the scatter of information, amount of the book which was read, and whether the patrons were looking for specific information. Of the 84.4% of patrons who stated that they found the information they sought, the percentage reporting that the desired

Table 16
Extent of Scatter of Wanted Information

Interview Question 18: Most of the information you wanted was in ...

	Main Library n=134 %	Branches n=152 %	Peak Period n=163 %	Nonpeak Period n=123 %	All Patrons N=286 %
One section	6.7	6.6	4.9	8.9	6.6
A few sections	14.2	16.4	16.6	13.8	15.4
Several sections	23.9	22.4	21.5	25.2	23.1
Many sections	21.6	15.1	20.9	14.6	18.2
All sections	33.6	39.5	36.2	37.4	36.7
	100.0	100.0	100.1	99.9	100.0

Table 17
Amount of Nonfiction Book Patrons Read and Extent of Scatter of Wanted Information (Question 14 by Question 18)

	Spread/Scatter of information: One Section %	A Few Sections %	Several Sections %	Many Sections %	All Sections %
Amount read					
Patrons looking for specific information:	n=14	n=28	n=30	n=28	n=39
Read 1/2 or less of the book	85.7	71.4	43.3	21.4	15.4
Read more than 1/2 of the book	14.3	28.6	56.7	78.6	84.6
	100.0	100.0	100.0	100.0	100.0
Patrons not looking for specific information:	n=5	n=16	n=36	n=24	n=66
Read 1/2 or less of the book	80.0	81.3	55.6	45.8	16.7
Read more than 1/2 of the book	20.0	18.8	44.5	53.3	83.3
	100.0	100.1	100.1	99.1	100.0

information was in one section of the book is low (table 16 and appendix B, table 3). On the other hand, a substantial percentage, 36.7%, stated that the information they wanted was in all sections of the book.

The data shown in table 17 seem to support what one would intuitively expect: the fewer the sections read, the less scattered is the desired information in the book. The seven groupings--less than 1/4 of the book, about 1/4 of the book, etc.--are collapsed into just two groupings because no pattern emerged from the finer divisions. It is worthwhile to note that whether a patron was looking for specific information or not did not seem to influence how much of a book he or she read.

3.5 Features Patrons Used for Finding Specific Information

It was noted earlier that according to the researchers' interpretation, 55.9% of the patrons were looking for specific information and another 35.4% were looking for information in roughly defined areas. However, when patrons were asked whether they were seeking specific information (question 12), 152 of the total 347 patrons, 43.8%, answered "yes" (table 12). Only these patrons were asked which features of a book they used for finding the specific information. Thus the following analyses are based on responses by these 152 patrons, even though a greater number of patrons may have used the features discussed below.

The patrons were given the following choices: table of contents; book index; preface; tables, charts, and diagrams; photographs or sketches; entire book; or other feature. Because the question allowed multiple answers and there were seven choices, the total number of possible combinations of answers is two to the seventh power, or 128. However, only twenty-five combinations of answers actually occurred in the study, and of these only six (or 4.7%) were significant. These data suggest that patrons' preferences for certain features of the book for finding information is not entirely random. As illustrated by the bar chart showing combinations of answers (fig. 4), of the 43.8% of all patrons who said they were looking for specific information, a total of 68.4% used just <u>one</u> of the features; the remaining were distributed as follows: 33.6% used a combination of two features; 9.6% used a combination of three features; and 2.8% used a combination of four features. As the number of features increases, there is a corresponding rapid drop in the percentage of patrons.

Which of the features do patrons who are looking for specific information choose most? Looking at the entire book was selected by 58.7% of the patrons answering this question (table 18); 40.1% of the patrons did not use <u>any other feature</u>. The table of contents, the second most-cited feature, was used as a method of locating the specific information by 35.8% of these patrons; however, just 10.5% of the patrons used the table of contents exclusively. The book index, a feature generally perceived as useful for finding specific information, was used by 27.2% of these patrons, either exclusively or in combination with other methods. It is likely that some of these patrons did not have the choice of a book index, because their book did not contain one.

Illustrative matter was covered by two choices: tables, charts, and diagrams; or photographs and sketches. A modest proportion of patrons used the former (6.8%), and a similarly modest proportion used the latter (10.7%). The percentage of patrons obtaining specific information from illustrative matter

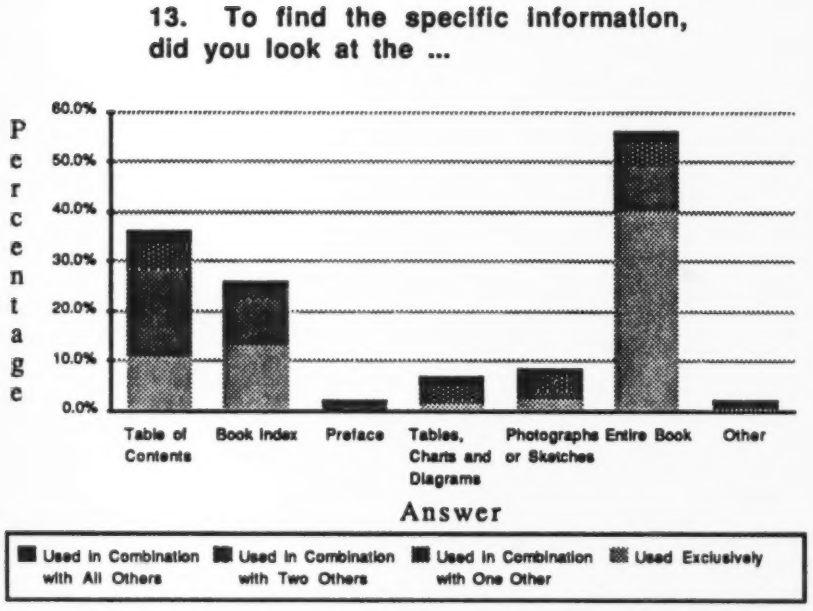


Fig. 4. Features patrons used to find specific information

Table 18
Features Patrons Used for Finding Specific Information

Interview Question 13: To find the specific information, did you look at the ... Answers	Main Library n=77 %	Branches n=75 %	Peak Period n=94 %	Nonpeak Period n=58 %	All Patrons N=152 %
Entire book					
Used exclusively	32.5	48.0	42.6	36.2	40.1
Used with other methods	16.9	20.0	15.9	22.4	18.6
Total this method	49.4	68.0	58.5	58.6	58.7
Table of contents					
Used exclusively	13.0	8.0	9.6	12.1	10.5
Used with other methods	28.6	21.3	22.3	29.3	25.3
Total this method	41.6	29.3	31.9	41.4	35.8
Book index					
Used exclusively	14.3	12.0	14.9	10.3	13.2
Used with other methods	13.0	14.7	12.3	15.6	14.0
Total this method	27.3	26.7	27.2	25.9	27.2
Photographs or sketches					
Used exclusively	3.9	1.3	4.3	0.0	2.6
Used with other methods	9.1	6.7	6.3	10.3	8.1
Total this method	13.0	8.0	10.6	10.3	10.7
Tables, charts, diagrams					
Used exclusively	2.6	0.0	0.0	3.4	1.3
Used with other methods	6.5	4.0	4.3	6.9	5.5
Total this method	9.1	4.0	4.3	10.3	6.8
Preface					
Used exclusively	0.0	0.0	0.0	0.0	0.0
Used with other methods	2.6	1.3	1.1	3.4	2.1
Total this method	2.6	1.3	1.1	3.4	2.1
Other					
Used exclusively	1.3	---	1.1	---	0.7
Used with other methods	2.6	---	2.1	---	1.3
Total this method	3.9	---	3.2	---	2.0

exclusively is very low (2.6% plus 1.3%, or 3.9%). One reason for this low use of illustrative matter might be that a majority of the books in this study did not contain illustrative matter. It is worth repeating that although illustrations are a source of specific information, three of this study's patrons explicitly stated that they interpreted examining the illustrations as reading none of the book; in other words, they did not consider obtaining information from illustrations to be reading.

3.6 Factors Affecting How Much of a Nonfiction Book Patrons Read

It was noted earlier that a set of questions (questions 10, 11, 19, 20, and 21) pertained to factors that could influence how much of a nonfiction book patrons read. Of these five questions, three (questions 19, 20, and 21) sought data on perceptions of the importance of the information, whether patrons had a specific use for the information, and how soon patrons intended to use the information. These three questions were directed only to those patrons who said they found the information which was sought (table 15). However, all 347 patrons were asked question 11, which concerned the contexts which prompted the need for information (school, business, home, etc.). Findings on the context of use follow those on patrons' perceptions of the importance of the information, specific uses for the information, and the immediacy of use of the information. Patrons' responses to question 10, concerning their purposes or reasons for seeking information, are presented in the following chapter, section 4.3, "Subject Dispersion of Patrons' Information Needs."

3.6.1 Perceptions of the Importance of the Information

To the question on the perception of the importance of the information (question 19), an overwhelming 93% of all patrons said the information they found was either "very important" or "somewhat important"; only 7% claimed the information was either "not that important" or "not important at all" (table 19). It is noteworthy that 60.2% of the Main Library group considered the information "very important," but at the branch libraries only 43.4% made this claim. In the suburban library branch in Dublin, on the outskirts of Columbus, only 33.3% of the patrons regarded the information as very important (appendix B, table 4). Perhaps social factors affect whether patrons are looking for information that may be viewed as critical, such as information on employment. It was not possible to determine whether patrons' perceptions of the importance of the information influenced how much of the book they read.

However, patrons' perceptions of the importance of the information seems to depend to some extent on whether the patron was looking for specific information or not (table 20). Of the patrons who claimed that the information was "very important," 65.2% were looking for specific information, in contrast to 38.1% of those who were not.

Table 19
Patrons' Perceptions of Importance of Information

Interview Question 19: How important is this information?

Answers	Main Library n=133 %	Branches n=152 %	Peak Period n=162 %	Nonpeak Period n=123 %	All Patrons N=285 %
Very important	60.2	43.4	51.2	51.2	51.2
Somewhat important	34.6	48.0	43.2	39.8	41.8
Not that important	3.8	7.2	4.9	6.5	5.6
Not important at all	1.5	1.3	0.6	2.4	1.4
	100.1	99.9	99.9	99.9	100.0

Table 20
Perception of the Importance of the Information by the Need for Specific Information (Question 19 by Question 12)

	Patrons were: Looking for Specific Information n=138 %	Not Looking for Specific Information n=147 %
Information was:		
Very important	65.2	38.1
Somewhat important	31.9	51.0
Not that important	2.2	8.8
Not important at all	0.7	2.0
	100.0	99.9

3.6.2 Specific Uses for the Information

Whether a patron has a specific use for the information obtained (question 20) may influence how much of a nonfiction book is read (question 14). However, no pattern emerged in a cross tabulation of the responses to these questions. Furthermore, no differences could be discerned between either Main versus branch libraries' patrons or between patrons during peak versus nonpeak circulation periods (table 21). In every category, roughly 80% of the patrons reported they had specific uses for the information. Responses to this question were similar also at each of the branch libraries (appendix B, table 5).

Table 21
Percentage of Patrons Reporting Specific Use

Interview Question 20: Do you have any specific uses for this information?

Answers	Main Library n=134	Branches n=152	Peak Period n=163	Nonpeak Period n=123	All Patrons N=286
Yes	81.3	80.3	80.4	81.3	80.8
No	18.7	19.7	19.6	19.6	19.2
	100.0	100.0	100.0	100.9	100.0

3.6.3 Immediacy of Use of Information

When patrons were asked when they expected to use the information (question 21), nearly 80% stated they had already used or expected to use the information within a month (table 22). More than half of all the patrons claimed to have already used the information. A detailed analysis shows no differences in responses to this question when Main and branch libraries' patrons are compared or when responses during peak and nonpeak periods are compared, and similar responses were found at each branch (appendix B, table 6). How soon the patron used the information did not seem to influence how much of the book a patron read (table 23).

Table 22
Immediacy of Use of Information

Interview Question 21: When do you expect to use this information?

Answers	Main Library n=109 %	Branches n=122 %	Peak Period n=131 %	Nonpeak Period n=100 %	All Patrons N=231 %
Have used already	56.0	58.2	56.5	58.0	57.1
Within a week	8.3	9.0	8.4	9.0	8.7
A month	11.9	13.1	13.7	11.0	12.6
Six months	19.3	13.9	15.3	18.0	16.5
A year	3.7	3.3	4.6	2.0	3.5
Perhaps never	0.9	2.5	1.5	2.0	1.7
	100.1	100.0	100.0	100.0	100.1

Table 23
Amount of Nonfiction Book Read and Immediacy of Use of Information (Question 14 by Question 21)

	Time Frame: Used Already n=132 %	Within a Week n=20 %	Month n=29 %	Six Months n=38 %	Year n=8 %	Perhaps Never n=4 %
Amount read:						
None	0.0	0.0	0.0	0.0	0.0	0.0
Less than 1/4	10.6	5.0	10.3	10.5	25.0	25.0
About 1/4	13.6	20.0	20.7	10.5	0.0	0.0
About 1/2	18.9	10.0	17.2	23.7	12.5	0.0
About 3/4	8.3	30.0	13.8	13.2	0.0	25.0
Almost all	18.1	10.0	10.3	13.2	12.5	0.0
All	30.3	25.0	27.6	29.0	50.0	50.0
	99.8	100.0	99.9	100.1	100.0	100.0

3.6.4 Context of Use

To recall, the term "context" in the present study refers to the environments (i.e., school, business, home, or personal) which occasion the need for information. How much of a book a patron reads could possibly be influenced by whether the patron intends to use the information in a personal or business context. Therefore, question 11, "Is this book for ...," sought data on the context in which the nonfiction material was used. As noted already, this question was directed to all 347 participants. A majority, 64.6%, were looking for information for personal use (fig. 5).

This question on the context of use allowed multiple answers. That is, if a patron used the nonfiction book in the context of both business and home, both answers were recorded. Thus, although "business" was mentioned more often than "home," use of the book only in the business context is less than that only in the home context.

Since this question has four cells, there are sixteen possible combinations of answers. However, only twelve combinations of answers actually occurred, and eight combinations of answers accounted for 50% of patrons' responses. The percentage of patrons using a book in the context of more than two environments is very low (only 1.5%).

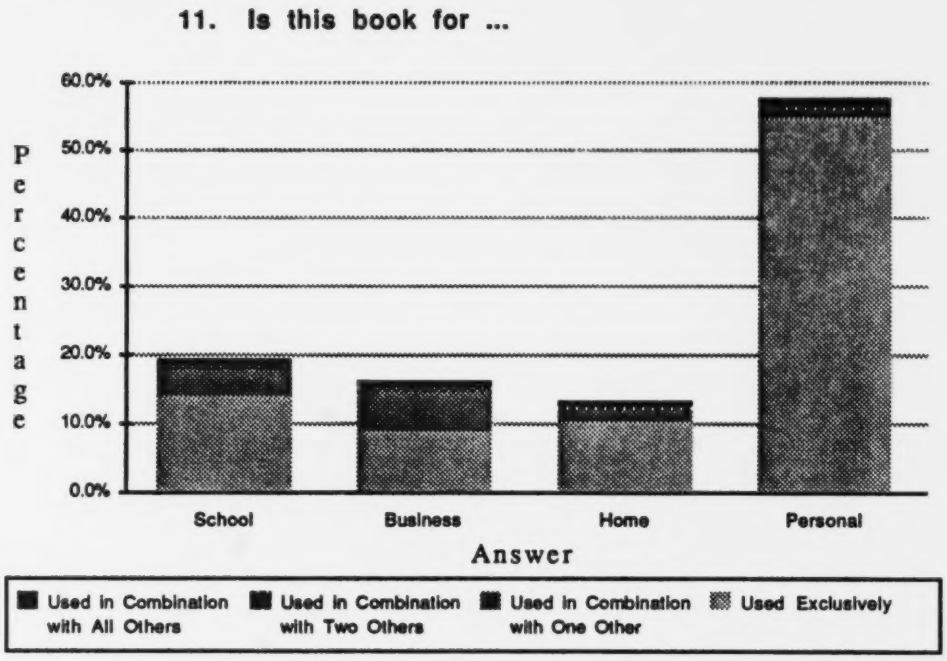


Fig. 5. Context of use

Is the amount of a book a patron reads influenced by the environment which occasions the need for information? Table 24 indicates that those who read nonfiction books for personal use tended to read a larger proportion of the book; in fact, a total of 70.5% of the patrons who were reading for personal use reported reading half, three-fourths, almost all, or all of the book. In contrast, those who read for school, business, or home use tended to read a smaller proportion of the book; for example, only 42% of those who said they were reading for business use reported reading half or more of the book.

Table 24
Amount of Nonfiction Book Read and Context of Use
(Question 14 by Question 11)

	Context of use: School Only n=50 %	Business Only n=31 %	Home Only n=36 %	Personal Only n=190 %	Two Contexts n=35 %	More Than 2 Contexts n=5 %
Amount read:						
None	8.0	0.0	0.0	2.1	0.0	0.0
Less than 1/4	24.0	16.1	19.4	5.3	11.4	20.0
About 1/4	18.0	19.4	13.9	7.4	20.0	0.0
About 1/2	10.0	22.6	25.0	14.7	22.9	20.0
About 3/4	12.0	6.5	8.3	10.5	5.7	40.0
Almost all	18.0	19.4	11.1	13.2	11.4	0.0
All	10.0	16.1	22.2	46.8	28.6	20.0
	100.0	100.1	99.9	100.0	100.0	100.0

3.6.5 Summary

The first three exploratory analyses of patrons' perceptions of the importance of the information, specific uses for the information, and immediacy of use for the information did not reveal factors which seem to influence how much of a nonfiction book a patron reads. Nevertheless, these analyses do suggest certain characteristics of nonfiction book readers. This group is, indeed, not casual about the role of information, as suggested by the following:

- An overwhelming majority, 93%, regarded the information they wanted as either "very important" or "somewhat important."

- About 80% of the patrons reported they had a specific use for the information they obtained.

- Nearly 80% stated they had either already used or expected to use the information within a month.

These data suggest that nonfiction book users are, as a group, goal-oriented, and they see nonfiction books as a valuable source of information.

The last exploratory analysis does suggest that the context of use for the information may to some extent determine how much of a book a patron is likely to read. When the context of use is personal, patrons tend to read a larger proportion of the book. When the context of use is school, business, or home, patrons tend to read a smaller proportion of the book. It may be that when information is sought for school, business, or home use, the information need is more sharply focused than when information is sought for personal use. Conversely, when information is sought for personal use, the motivation for learning is stronger and consequently leads to reading a larger proportion of the book.

4. Findings II: Characteristics of Nonfiction Book Readers and Implications for Electronic Information Systems

This chapter begins with a section describing three categories of patrons (those with prior knowledge of the book they borrowed, those who selected the book at the library catalog, and those who selected the book at the shelves). A second section presents a path analysis which groups patrons according to the series of decisions a patron made in the information search process. This is followed by analyses of the subject dispersion of patrons' information needs. This chapter concludes with implications of the findings for electronic information systems.

4.1 Three Categories of Patrons

In any investigation of how public library patrons use nonfiction books, the question of how they learn about or select a particular nonfiction book naturally arises. To answer this question, four of the interview questions (questions 6, 7, 8, and 9) asked patrons how they selected the book they borrowed.

Patrons' answers to interview question 6 ("You decided to borrow this book because...") are reported in table 25. Clearly, the findings indicate that nonfiction book users fall into the following three categories:

- Those who have prior knowledge of the book, or known-item users (24.8%)
- Those who use the library catalog to select the book, or catalog users (19.9%)
- Those who browse at the shelves to decide which book to borrow, or browsers (55.3%)

These three categories provide an empirical model for characterizing the population of public library patrons who read nonfiction books.

More Main Library patrons (28.6%) than branch libraries' patrons (21.8%) claimed they had prior knowledge of the book. Patrons at the branch libraries (59.6%) were somewhat more likely than Main Library patrons (50%) to have browsed the shelves to select a book for borrowing. (See appendix B, table 7 for results for individual branch libraries.)

Table 25
Patrons' Methods of Selecting a Nonfiction Book

Interview Question 6: You decided to borrow this book because you ...

Answers	Main Library n=154 %	Branches n=193 %	Peak Period n=205 %	Nonpeak Period n=142 %	All Patrons N=347 %
Had prior knowledge of this book	28.6	21.8	22.9	27.5	24.8
Selected the book using the library catalog	21.4	18.7	20.5	19.0	19.9
Selected the book from the shelves	50.0	59.6	56.6	53.5	55.3
	100.0	100.1	100.0	100.0	100.0

Table 26 shows the responses to many of the interview questions by the three categories of patrons. A comparison of their answers reveals certain characteristics of each group.

4.1.1 Patrons with Prior Knowledge of the Book

Patrons in this group were more likely to be looking for information for personal use (62.8%) than patrons who used the catalog (40.6%) or browsed (56.3%; see table 26). This group of patrons reported reading all of the book more frequently than the other two groups, catalog users and browsers. With reference to the context of use, it was noted that a substantial percentage of patrons (46.8%) who were looking for information for personal use read all of the book (table 24). Both of these analyses suggest that patrons who seek information for personal use are less likely than others to read just parts of a nonfiction book.

Patrons' methods of acquiring knowledge of a nonfiction book prior to coming to the library are shown in table 27. The most popular method was recommendation of the book by a friend (26.7% of the answers); previous use of the book (15.1% of the answers), in second place, is unexpected in the public library environment.

Patrons with prior knowledge of the nonfiction book were not asked how they located the particular book on the library shelves, because the researchers assumed that electronic information systems will facilitate searching for known items, so methods patrons use for locating the physical book become irrelevant.

Table 26
Responses by Three Groups of Users: Those with Prior Knowledge of Book, Catalog Users, and Browsers

Answers	Prior Knowledge of book %	Catalog Users %	Browsers %	All Patrons %
Interview Question 26: Please select your age group.	n=86	n=69	n=192	N=347
Under 20	1.2	11.6	5.2	5.5
20-24	7.0	17.4	14.0	13.0
25-34	30.2	34.8	29.2	30.6
35-44	32.6	24.6	31.2	30.3
45-54	14.0	5.8	8.3	9.2
54-65	9.3	2.9	8.3	7.5
Over 65	5.8	2.9	3.7	4.0
	100.1	100.0	99.9	100.1
Interview Question 12: Were you looking for any specific information?	n=86	n=69	n=192	N=347
Yes	45.4	62.3	36.5	43.8
No	54.7	37.7	63.5	56.2
	100.1	100.0	100.0	100.0
Interview Question 20: Do you have any specific uses for this information?	n=74	n=63	n=149	N=286
Yes	81.1	87.3	77.9	80.8
No	18.9	12.7	22.2	19.2
	100.0	100.0	100.1	100.0
Interview Question 14: Did you read ...	n=86	n=69	n=192	N=347
None of the book	2.3	0.0	3.1	2.3
Less than 1/4	9.3	14.5	10.9	11.2
About 1/4	10.5	8.7	13.5	11.8
About 1/2	14.0	14.5	18.8	16.7
About 3/4	8.1	11.6	10.4	10.1
Almost all	12.8	21.7	11.5	13.8
All of the book	43.0	29.0	31.8	34.0
	100.0	100.0	100.0	99.9

Table 26 continued
Responses by Three Groups of Users:
Those with Prior Knowledge of Book, Catalog Users, and Browsers

Answers	Prior Knowledge of book %	Catalog Users %	Browsers %	All Patrons %
Interview Question 18: Most of the information you wanted was ...	n=74	n=63	n=149	N=286
In one section of the book	2.7	9.5	7.4	6.6
In a few sections	13.5	9.5	18.8	15.4
In several section	28.4	23.8	20.1	23.1
In many sections	12.2	28.6	16.8	18.2
In all sections	43.2	28.6	36.9	36.7
	100.0	100.0	100.0	100.0
Interview Question 11: Is this book for ...	n=86	n=69	n=192	N=347
School	9.3	29.0	11.5	14.4
Business	8.1	14.5	7.3	8.9
Home	8.1	7.3	12.5	10.4
Personal	62.8	40.6	56.3	54.8
Two of the above contexts	10.5	5.8	11.5	10.1
Three of the above contexts	1.2	2.9	0.0	0.9
All four contexts	0.0	0.0	1.0	0.6
	100.0	100.1	100.1	100.1
Interview Question 19: How important is this information?	n=74	n=62	n=149	N=285
Very important	62.1	67.7	38.9	51.2
Somewhat important	28.4	30.7	53.0	41.6
Not that important	6.8	1.6	6.7	5.6
Not important at all	2.7	0.0	1.3	1.4
	100.0	100.0	99.9	99.8
Interview Question 17: Did you find the information you were looking for?	n=84	n=69	n=186	N=339
Yes	88.1	91.3	80.1	84.3
No, wasn't in this book	0.0	7.3	4.3	3.8
No, wasn't looking for information	11.9	1.5	15.6	11.8
	100.0	100.1	100.0	99.9

Table 27
Patrons' Methods of Acquiring Prior Knowledge of a Book

Method	Percent of Responses n=86
Recommended by a friend	26.7
Used this book before	15.1
Saw it on mass media	11.6
Know this subject area	9.3
Know the author	7.0
Was referred to by another book or journal	5.8
Saw it in the bookstore	5.8
Knew from previous library experience	3.5
Librarian selected	3.5
Learned about it in school	2.3
Other	5.8
Unclear	3.5
	99.9

4.1.2 Patrons Who Selected a Book at the Library Catalog

This category of catalog users excludes those patrons from either of the other two categories who used the catalog to learn the physical location of a particular book or group of books. In other words, the observations which follow pertain only to those patrons who claimed that they selected the particular book at the catalog (19.9%).

Patrons under age 25 tended to select a book at the library catalog more often than older patrons (table 26). Patrons who selected a book at the catalog were more likely to be looking for specific information than those who selected a book at the shelves or those with prior knowledge of the book. However, patrons who selected a book at the library catalog were not much more likely than the other two groups to say that they had specific use for the information. Catalog users showed a greater tendency to find the desired information in one section of the book. Patrons who looked for information to use in a business or school context tended to select a book at the catalog.

Catalog users at the Main and branch libraries showed similar preferences in their choice of entry features, that is, author or title (table 28). A title approach to the catalog was a clear first choice. There seems to be no difference among this group during peak and nonpeak periods. Of those whose replies fell into the category defined in table 28 as "Other," three-fourths chose "subject" information for selecting the book. The researchers did not include subject information as a category, because subject information did not surface as a category in the pretest.

Table 28
Entry Features Preferred by Catalog Users

Interview Question 7: Did any of the following help you decide that you wanted this book?

Answers	Main Library n=33 %	Branches n=36 %	Peak Period n=42 %	Nonpeak Period n=27 %	All Patrons N=69 %
Author's name	3.0	5.6	7.1	--	4.3
Title of the book	69.7	61.1	66.7	63.0	65.2
Other	27.3	33.3	26.2	37.0	30.4
	100.0	100.0	100.0	100.0	99.9

4.1.3 Patrons Who Selected a Book at the Shelves

A majority of the patrons in this study, 55.3%, browsed at the shelves to select their book (table 25). How do patrons who select a book at the shelves know which shelves to go to? Of this group of browsers, 45.3% stated that they had knowledge of the shelves from previous library visits (fig. 6, table 29). Another 18.8% used the library catalog to decide which shelves to go to, and 9.4% asked the library staff. A combination of methods was used by 1.0% of these patrons. How the remaining browsers found book shelves of interest to them is shown in table 29 under the category "Other." Goldhor (1981) has shown that new book displays influence book selection, so it is not surprising that in the category "Other" in table 29, the "new displays" item ranks high.

Browsers, that is, patrons who selected a book at the shelves, were less likely than other patrons to perceive the needed information as "very important" (table 26). Yet browsers were likely to be heavy users of libraries. When the researchers analyzed the data pertaining to frequency of library visits (question 22), they learned that browsers made up a substantial proportion, 61.1%, of the patrons who said they visited the library more than once a week.

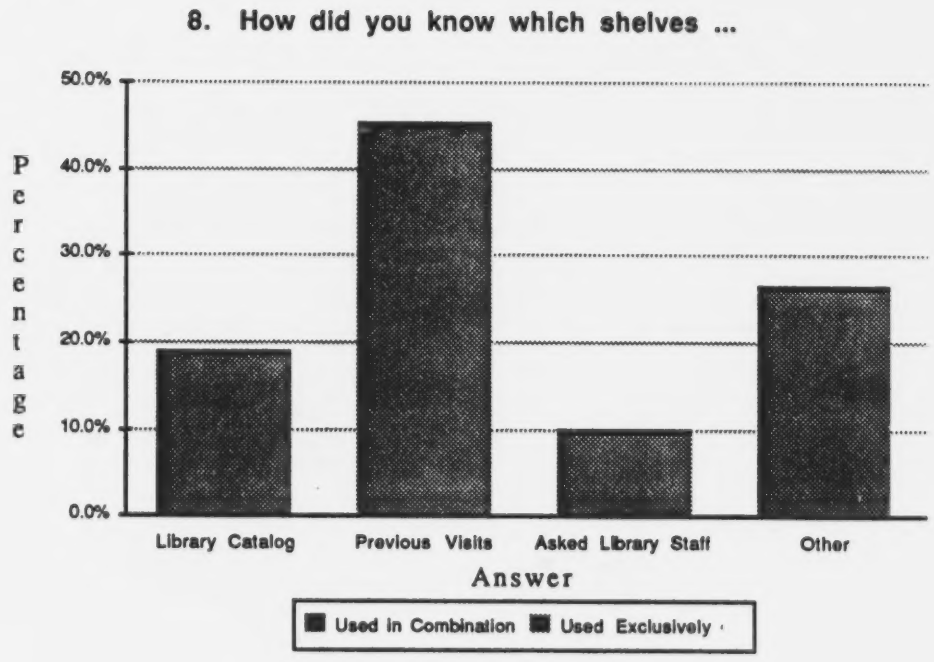


Fig. 6. Location methods used by those who selected the book from the shelves

Table 29
Browsers' Methods of Deciding Which Shelves to Go To

Interview Question 8: How did you know which shelves to go to?

Method	Percent of Responses n=192
Knew from previous visits	45.3
Used the library catalog	18.8
Asked the library staff	9.4
Used a combination of methods	1.0
Other:	
New book display	9.9
Wandered around	5.2
Browsing around	5.2
Was looking for something else	2.6
Knew the DDC system	1.5
Used the printed subject index	1.0
Used the finding guides posted at the end of the book shelves	1.0
	100.9*

*Greater than 100% because multiple answers were allowed.

Since browsers formed the largest group of patrons and might be the heaviest users of libraries, it is important to consider what features they used to select a nonfiction book. Browsers were asked to choose one or more choices from the following list of seven features: title of the book, skimming the pages, author's name, table of contents, blurbs on the cover, book index, and pictures or illustrations (table 30). Of the 128 (two to the seventh power) possible combinations of answers, 40 were chosen by patrons in this study, and 12 of these accounted for a third of patrons' responses. That browsers' responses cluster around certain combinations of answers suggests that their preferences for features used to select a book are not entirely random. The title of the book was a clear first choice (52.5% of the answers). Although skimming the pages was the second-most popular technique (38% of the answers), it was used as the exclusive method (that is, alone, and not in combination with other methods) only 9.4% of the time. Browsers generally used a combination of methods for selecting a book.

Table 30
Browsers' Methods for Selecting a Book

Interview Question 9: Which of the following helped you select this book?

Answers	Main Library n=76 %	Branches n=115 %	Peak Period n=115 %	Nonpeak Period n=76 %	All Patrons N=191 %
Title of the book					
Used exclusively	23.7	23.5	19.1	30.3	23.6
Used with other methods	22.4	33.9	30.5	27.6	28.9
Total this method	46.1	57.4	49.6	57.9	52.5
Skimming the pages					
Used exclusively	14.5	6.1	7.0	13.2	9.4
Used with other methods	36.8	23.5	28.7	28.9	28.6
Total this method	51.3	29.6	35.7	42.1	38.0
Author's name					
Used exclusively	2.6	7.0	5.2	5.3	5.2
Used with other methods	6.6	6.9	7.8	6.5	7.1
Total this method	9.2	13.9	13.0	11.8	12.3
Table of contents					
Used exclusively	6.6	3.5	4.3	5.3	4.7
Used with other methods	14.6	21.7	16.6	22.3	18.4
Total this method	21.2	25.2	20.9	27.6	23.1
Blurbs on the cover					
Used exclusively	3.9	4.3	7.0	0.0	4.2
Used with other methods	6.6	15.7	14.7	7.9	11.7
Total this method	10.5	20.0	21.7	7.9	15.9
Book index					
Used exclusively	0.0	1.7	1.7	0.0	1.0
Used with other methods	3.9	10.5	7.1	9.2	7.6
Total this method	3.9	12.2	8.8	9.2	8.6
Pictures or illustrations					
Used exclusively	2.6	2.6	4.3	0.0	2.6
Used with other methods	18.5	13.9	18.3	11.8	15.4
Total this method	21.1	16.5	22.6	11.8	18.0

4.1.4 Summary

As noted already, the three categories of patrons provide an empirical model for characterizing the population of public library patrons who use nonfiction books. The findings show that those with prior knowledge of the book they borrowed (i.e., known-item users) are more likely than catalog users or browsers to read all of the book. Based on these findings, the researchers speculate that since for extensive or leisurely reading of text, books in paper form are more convenient than books in electronic forms, at least 40% of known-item users would not find reading nonfiction books in electronic forms attractive (see table 26 under question 14).

On the other hand, books which are consulted in parts or short sections lend themselves to use in an electronic mode. The findings indicate that patrons who selected their book at the catalog were most likely to be looking for specific information and most likely to report that they found the information in one section of the book (table 26). Furthermore, patrons who looked for information for use in school or business contexts (i.e., those more likely to have well defined information needs) and younger patrons (i.e., those most open to new technologies) tended to use the catalog. Therefore, although those who selected their book at the catalog formed only one-fifth of the population of nonfiction book readers in this study, the researchers speculate that they are a target audience for introducing nonfiction books in an electronic mode.

The sheer size of the group of browsers (55.3% of the patrons in this study) makes them an important group of nonfiction book users. In stating how they knew which shelves to go to, a substantial percentage of browsers said they had knowledge of the shelves from previous visits (table 29, fig. 6). The public library system in this study uses a DDC shelf arrangement, with the result that books are in order by subject. In going directly to the shelves to select their books, browsers were actually taking a subject approach for selecting a book. Once at the shelves, browsers looked at the titles of books and skimmed the pages, among other techniques for selecting a book. While browsers were less likely than known-item users or catalog users to perceive the information they wanted as "very important" (table 26 under question 19), they tended to visit the library more. All of this suggests that without the provision of selection techniques that are familiar to browsers, electronic information systems that include nonfiction books will serve less than 50% of the potential audience.

The characteristics of these three groups of patrons are further summarized in a section entitled the "Audience for Nonfiction Books in an Electronic Mode" (section 5.4.1).

4.2 Path Analysis

Once at the library, a patron who is seeking information may consult a librarian, look in the library catalog, or proceed directly to the shelves. Then, after selecting a particular book, the patron has several options for finding information in that book. The table of contents, index, preface, tables and photographs, and so on, alone or in combination, may facilitate finding the information which is needed. The patron also has the option of reading all or part or none of the book which has been selected.

For a given patron, a particular sequence of such choices determines what might be called a "path." In fact, the interview script (fig. 1) includes many branches and skips to accommodate a wide variety of choices in the information search process. If an information search is considered as a sequence of alternatives (some of which are selected and some of which are not selected), then the path provides a convenient conceptual model.

The sequences of choices relevant to this study are defined by patrons' answers to interview questions 6, 12, 14, and 17. These questions are important for three reasons: first, they address the main issues of this study; second, each question results in branching to different parts of the interview; third, every patron answered questions 6, 12, and 14, and 97.7% of the patrons answered question 17. The questions are as follows:

Interview Question 6: You decided to borrow this book because you ...

(1) Had prior knowledge of this book
(2) Selected it using the library catalog
(3) Selected it from the shelves

Interview Question 12: Were you looking for any specific information?

(1) Yes
(2) No

Interview Question 14: Did you read ...

(1) None of the book
(2) Less than 1/4, about 1/4, about 1/2, or about 3/4 (any of these choices)
(3) Almost all, or all of the book (either of these choices)

Interview Question 17: Did you find the information you were looking for?

(1) Yes
(2) No, wasn't in this book
(3) No, wasn't looking for information

A "path" is defined as a particular sequence of answers to these questions. Path 3-2-2-1, for instance, is a shorthand way to refer to the path defined by:

- Answer (3) to question 6 (the patron decided to borrow the book because he or she selected it from the shelves)
- Answer (2) to question 12 (the patron was not looking for any specific information)
- Answer (2) to question 14 (the patron read some fraction of the book)
- Answer (1) to question 17 (the patron found the information he or she was looking for)

There are fifty-four possible paths through these four questions. However, of the fifty-four possible paths, only twenty-three actually occurred in this study. The fifty-four paths may be grouped into three categories:

Category I. "Principal paths." This category includes the eight most important paths in the sample, and each accounts for at least eighteen respondents, or 5.31%.

Category II. The paths in this category account for at least one respondent (0.29%) but at most seventeen respondents (5.01%).

Category III. The paths in this category account for no respondents (0%).

The twenty-three paths that actually occurred in the study are in Categories I and II. Sorted by their size in the sample, from greatest to least, the paths that occurred are as follows:

	Path	n	%	Cumulative %
Category I:				
1	3-2-2-1	48	14.16	14.16
2	3-2-3-1	41	12.09	26.25
3	3-1-2-1	33	9.73	35.98
4	3-1-3-1	27	7.96	43.94
5	1-1-2-1	22	6.49	50.43
6	1-2-3-1	22	6.49	56.92
7	2-1-3-1	22	6.49	63.41
8	2-1-2-1	18	5.31	68.72
Category II:				
9	1-1-3-1	17	5.01	73.73
10	3-2-3-3	15	4.42	78.15
11	1-2-2-1	13	3.83	81.98
12	3-2-2-3	13	3.83	85.81
13	2-2-2-1	12	3.54	89.35
14	2-2-3-1	11	3.24	92.59
15	1-2-3-3	9	2.65	95.24
16	3-1-2-2	5	1.47	96.71
17	2-1-2-2	3	0.88	97.59
18	3-2-2-2	3	0.88	98.47
19	1-2-2-3	1	0.29	98.76
20	2-2-2-2	1	0.29	99.05
21	2-2-3-2	1	0.29	99.34
22	2-2-3-3	1	0.29	99.63
23	3-1-2-3	1	0.29	99.92

About one-fourth of the respondents took the first two paths (3-2-2-1 or 3-2-3-1). As stated above, in path 3-2-2-1, the respondent selected the book from the shelf, was not looking for any specific information, read part of the book, and found the information he or she was looking for. The second path, 3-2-3-1, is the same except the respondent read almost all or all of the book. The third and fourth paths (3-1-2-1 and 3-1-3-1) were taken by respondents who selected the book from the shelf, were looking for specific information, read part or all of the book, and found the information which was sought. The fifth and sixth paths (1-1-2-1 and 1-2-3-1) were taken by patrons who had prior knowledge of the book and who found what they were looking for. The seventh and

eighth (2-1-3-1 and 2-1-2-1) were taken by respondents who used the library catalog, were looking for specific information, read part or all of the book, and found the information.

By grouping the "principal paths" as 1 and 2, 3 and 4, 5 and 6, and 7 and 8, almost 70% of the respondents can be classified into four groups:

Group	Paths	Description
1	1 & 2	True browsers
2	3 & 4	Information-seeking browsers
3	5 & 6	Known-item users
4	7 & 8	Information-seeking catalog users

It is interesting to note that all the patrons who followed these eight paths claimed they found the information they were looking for (i.e., answered "yes" to the question "Did you find the information you were looking for?").

Of the fifty-four possible paths that patrons could have taken through the interview, these eight alone account for nearly 70% of the respondents. Conjecturing that these groups of users represent a legitimate classification of the user population, with some explanatory power, the researchers would be interested to see whether other or future studies replicate this classification, or something like it, and if so, whether the size-ranking of these user groups is maintained.

4.3 Subject Dispersion of Patrons' Information Needs

One of the objectives of this study was to explore the subject dispersion of patrons' information needs. The subject dispersion analyses were performed in four different ways:

- Scope of the information needs
- Purposes/reasons underlying the information search
- Subject dispersion as indicated by Dewey Decimal Classification numbers
- Topics on which patrons sought information

These four analyses were based on patrons' responses to the following five interview questions (questions 4, 5, 10, 12, and 20):

4. What is this book about?
5. Book call number: _____
10. Can you tell me why you borrowed this book?
12. Were you looking for any specific information?
20. Do you have any specific use(s) for this information?

The first and second of these questions obtained data on the subject content of the book, as described by the patron and as indicated by the book's DDC number. Patrons' answers to the third, fourth, and fifth of these questions provided additional data for examining subject dispersion. To recall, questions 12 and

20 were answered in the affirmative by 43.8% and 80.8% of the patrons, respectively. Only those patrons who answered affirmatively were asked to describe the information they were looking for or their specific use for it. Thus, the researchers had varying amounts of data for the subject dispersion analyses.

4.3.1 Scope of the Information Needs

Based on the responses to the questions listed above, the researchers determined the subject scope of the information need of each of the patrons as falling in one of these three categories: (1) specific, (2) focused, but not specific, and (3) broad.

Patrons' answers such as "use recipes for preventing headaches" and "to build bird houses and feeders" were categorized as specific. In contrast, responses such as "for remodeling" and "to use in my classroom" were regarded as focused, but not specific. Finally, such answers as "I am interested in art" or "I like dancing" were categorized as broad in subject scope. Results of the subject scope analysis are shown in table 31.

Phrases in themselves, interpreted out of context, can be misleading. It must be emphasized that these categories were determined by researchers' interpretations of all relevant data for each patron. Two researchers independently determined the scope of each patron's information need. Patrons' answers categorized differently by the researchers were then discussed and the differences were resolved.

Other analyses presented earlier showed that library catalog users are more likely than other patrons to be seeking specific information (table 26). Analysis of the subject scope of catalog users' information needs confirms this.

Table 31
Scope of Information Needs by
Those with Prior Knowledge of Book, Catalog Users, and Browsers

Scope	Prior Knowledge of book n=86 %	Catalog Users n=69 %	Browsers n=192 %	All Patrons N=347 %
Specific	51.2	78.3	50.0	55.9
Focused, but not specific	44.2	18.8	37.5	35.4
Broad	4.7	2.9	12.5	8.6
	100.1	100.0	100.0	99.9

4.3.2 Purposes/Reasons Underlying the Information Search

Patrons' stated purposes or reasons for the search for information clustered around eleven broad categories (see table 32). These categories, presented in descending order of occurrence, are empirically derived. Whereas the top ranking category "interest" does not reveal subject content, the categories which follow suggest broad subject areas in which public library patrons read nonfiction books. To recall, patrons' answers to the question about context of use (question 11) showed that the majority of the patrons, 64.6%, were looking for information for personal use. The four categories for responding to the question on context of use (i.e., school, business, home, personal) were decided upon by the researchers. In contrast, when asked to state their purposes or motives for seeking information in their own words, only 3.5% of the patrons said "personal" use (table 32). Thus, the category "personal" in reference to context of use (a researcher-derived category) includes several subsets which appear under the empirically derived categories in table 32.

Table 32
Purposes Prompting Information Search by Those with Prior Knowledge of Book, Catalog Users, and Browsers

Purpose	Prior Knowledge of book n=86 %	Catalog Users n=69 %	Browsers n=192 %	All Patrons N=347 %
Interest	34.9	11.6	30.2	27.7
Employment	24.4	17.4	16.7	18.7
School	7.0	27.5	10.4	13.0
Home	4.7	7.2	15.6	11.2
Recreation	2.3	10.1	8.9	7.5
Family	4.7	5.8	6.8	6.1
Travel	8.1	4.3	4.2	5.2
Personal	1.2	7.2	3.1	3.5
Fitness, health	3.5	2.9	1.6	2.3
Community service	4.7	2.9	0.5	2.0
Writing, publishing	2.3	1.4	2.1	2.0
Unknown	2.3	1.4	0.0	0.9
	100.1	99.7	100.1	100.1

An information search prompted by interest (27.7% of all responses) is not that likely to lead to use of the library catalog; only 11.6% of the catalog users named "interest" as their reason for seeking information. It is also interesting to note that a substantial number of patrons who borrowed a book for employment-related information claimed prior knowledge of the book (24.4%). Patrons looking for information related to school clearly favored the use of the library catalog (27.5%). This reconfirms the findings reported in table 26 under question 11.

4.3.3 Subject Dispersion as Indicated by DDC Numbers

Another way the researchers identified subjects was by grouping the nonfiction books according to the classification scheme used locally, in this case, the Dewey Decimal Classification (DDC) scheme. The breakdown of nonfiction books by DDC class number is shown in table 33. More than a third of all the books borrowed by patrons in this study were classed in the 600s, Technology (applied sciences).

Another 14.7% of the books borrowed by patrons in this study were classed in the 300s, Social Sciences. It is unclear why patrons who borrowed social science books were more likely than patrons who borrowed books in other DDC classes to have used the catalog to select the book. Because a large number of nonfiction books were biographies, they are shown as a separate category in table 33.

A subject analysis by DDC scheme, however, is not particularly illuminating. For instance, how a patron thinks about a subject and how that subject is classed in DDC can sometimes be different. For example, "Pregnancy" was named six times as a topic of interest. Books on pregnancy are classed in the 600s in the DDC scheme, and it is unlikely that one would think of pregnancy in terms of technology.

4.3.4 "Topics of Interest"

Because the DDC analysis was not particularly illuminating, the researchers analyzed patrons' subject interests by topic. The results are shown in table 34. Admittedly, a list such as this is fraught with problems familiar to classifiers. For example, the terms "history," "electronics," and "cars" describe subjects, whereas the terms "opening a business," "writing," and "cooking" refer to processes or purposes for which the patron sought information. Even the subject terms are not necessarily of comparable scope. However, despite the problems with the terminology of the topics, the list in table 34 seems useful because it retains the vocabulary patrons used to describe their subjects of interest.

Table 33
DDC Distribution of Nonfiction Books by Those with Prior Knowledge of Book, Catalog Users, and Browsers

DDC Class	Prior Knowledge of book n=86 %	Catalog Users n=69 %	Browsers n=192 %	All Patrons N=347 %
000 Generalities	0.0	0.0	0.5	0.3
100 Philosophy, related disciplines	2.3	2.9	2.1	2.3
200 Religion	2.3	5.8	3.1	3.5
300 Social sciences	12.8	21.7	13.0	14.7
400 Language	2.3	1.4	0.0	0.9
500 Pure sciences	2.3	2.9	6.8	4.9
600 Technology (applied sciences)	24.4	37.7	36.0	33.4
700 The arts	9.3	10.1	12.5	11.2
800 Literature (belles-lettres)	3.5	0.0	1.0	1.4
900 General geography and history	16.3	11.6	10.9	12.4
Biographies	16.3	0.0	8.9	8.9
Other	2.3	4.3	3.1	3.2
No class number	4.7	0.0	2.1	2.3
Missing data	1.2	1.4	--	0.6
	100.0	99.8	100.0	100.0

Table 34
Topics on Which Patrons Sought Information

Topic	Frequency Count	Cumulative Frequency Count
Biography	36	36
History	22	58
Travel	22	80
Hobby	20	100
Social issues	19	119
Family	14	133
Home improvement	13	146
Programming, computers	12	158
Electronics	11	169
Religion	11	180
Exercise, diet	10	190
Popular psychology	10	200
Science topics	10	210
Test taking, e.g., GRE	10	220
Animals	9	229
Business topics	8	237
Cars	7	244
Cooking	7	251
Health	7	258
Education topics	6	264
Gardening	6	270
Pregnancy	6	276
Geography	5	281
Resume writing & interviewing	5	286
Sewing, needlepoint	5	291
Architecture	4	295
Engineering topics	4	299
Jobs	4	303
Opening a business	4	307
Photography	4	311
Writing, publishing	4	315
Arts	3	318
Fashion	3	321
Investments	3	324
Performing arts	3	327
Philosophy	3	330
Recreation	3	333
Film arts	2	335
French language	2	337
Economics	2	339
Income tax	2	341
Law	2	343
Home organization	2	345
Humor	1	346
Sports	1	347

4.3.5 Summary

The researchers had varying amounts of data for the analyses of subject dispersion because not all patrons described the information they were looking for or their specific use for it. Therefore it was inevitable that the analyses of patrons' information needs by subject would pose a problem. Nevertheless, the above analyses were useful. The first, on the scope of the information need (table 31), provided the basis for examining the assumption that nonfiction books are read mainly for obtaining information, and in fact, this table indicates that all but 8.6% of nonfiction book users' information needs may be specific or focused in scope. The next two analyses, on the reasons underlying an information search and the subject dispersion of patrons' interests as indicated by DDC numbers (tables 32 and 33), are exploratory. Further investigation of nonfiction books used in seeking employment information (table 32) and of those classed in the 600s (table 33) might identify types of nonfiction books suitable for use in electronic information systems. The last analysis, on the topics on which patrons sought information (table 34), reinforces the notion that the public library setting captures a wide spectrum of patrons with a wide spectrum of interests.

4.4 Implications for Electronic Information Systems

The findings of the present study support to some degree the premises which underlie the inclusion of nonfiction books in an electronic information system, namely, that books are consulted primarily for obtaining information and consequently tend to be consulted in parts (tables 12, 13, and 31). The fact that 84.4% of the nonfiction book users found the information they were looking for and that 80.8% of the users stated they had a specific use for the information shows that nonfiction books are, indeed, an important source for obtaining information (tables 15 and 21).

4.4.1 The Audience for Nonfiction Books in an Electronic Mode

This study found that only 4.9% of all the patrons entering the library were returning nonfiction books for themselves. Even if all the study participants were looking for specific information and read nonfiction books only in parts, not completely, nonfiction books (excluding reference books) in an electronic mode are likely to serve no more than one-twentieth of public library patrons. However, this 4.9% of patrons excludes those who use nonfiction books within the library building and also excludes those who use noncirculating reference books.

In any case, this low percentage of patrons who were returning nonfiction books for themselves should not discourage those who are considering introducing nonfiction books in an electronic mode. These patrons, though few in number, are heavy users of libraries and therefore represent an important segment of the population. To recall, 96.6% of these patrons who qualified for full interviews visited the library at least once a month and 88.4% borrowed nonfiction books at least once a month. This concentration of heavy library use by a small percentage of patrons is not an unusual finding. As mentioned before, Berelson

observed with reference to the concentration of book borrowing that 5% of the borrowers accounted for 40% of the circulation. Although Berelson's data may include fiction and other book-like materials, the phenomenon of concentration of library use among a small group of patrons is apparent. Thus, including nonfiction books in a full-text database that can be accessed electronically might serve some of the heavy users of libraries (table 10), and possibly an important segment of the population.

The findings pertaining to the characteristics of the three groups of patrons--those with prior knowledge of the book they borrowed, those who selected the book at the catalog, and those who selected the book at the shelves--prompt some speculations about nonfiction book users as a potential audience for electronic information systems which include nonfiction books.

Books that are consulted in parts or short sections lend themselves to use in electronic mode. Thus, nonfiction books accessible electronically may best serve the second group, catalog users. About one-fifth of the patrons in this study selected the book they borrowed at the catalog. Those who selected their nonfiction book at the catalog were more likely than known-item users or browsers to read just parts of the book (table 26). Compared with the other two groups, they also showed a greater tendency to look for specific information, have a specific use for the information, seek information for use in the context of school or business, and consider the information "very important." They also had greater success at finding the information which they sought. Based on these findings, the researchers speculate that even though this group of nonfiction book users is relatively small, it is an important audience for nonfiction books in an electronic mode.

For extensive or leisurely reading, books in paper form are perhaps more convenient than those in electronic forms. Among patrons who had prior knowledge of the book they borrowed (known-item users), 40% said they read all of the book (table 26). These nonfiction book users may not favor the electronic mode over nonfiction books in paper form.

A comparison of browsers with known-item users and catalog users revealed that browsers, as a whole, are the least likely to be looking for specific information, have a specific use for it, or consider the information "very important" (table 26). In other words, obtaining information is less critical for browsers. These findings do not necessarily imply that browsers will not use nonfiction books in an electronic mode, but that their approach to nonfiction books is different.

Within a public library system, the central library of the system appears to be a better choice than the branch libraries for introducing nonfiction books in an electronic mode. Exactly 50% of the Main Library patrons said they were looking for specific information, in contrast to only 39% of the branch libraries' patrons (table 12). At the Main Library, 16.2% of the patrons read less than one-fourth of the book, whereas at the branch libraries, 7.3% read less than one-fourth of the book (table 13). Nearly 90% of the Main Library patrons succeeded in finding they information they sought, compared to 80% of the branch libraries' patrons (table 15). Furthermore, 16.8% of the branch libraries' patrons were not looking for information, compared to just 5.4% of the Main Library patrons who answered in this way (table 15). In addition, 60.2% of the Main Library patrons perceived the information to be "very important" as opposed

to only 43.4% of the branch libraries' patrons. If an electronic information system including nonfiction books would be most attractive to those who are seeking specific information and who consequently read nonfiction books in parts, not completely, then the findings suggest that an electronic information system would be better suited to the nonfiction book use patterns of a main library, rather than the branches of a metropolitan public library system.

The findings pertaining to context of use (table 24) suggest two other environments for introducing nonfiction books in an electronic mode. Of the patrons who were looking for information for use in a school or business context, 42% and 35.5% reported reading one-fourth or less of the book. These patrons would probably find nonfiction books in electronic mode convenient, and possibly an electronic information system including nonfiction books would serve the patrons of academic and corporate libraries.

4.4.2 Features Needed for Selecting Nonfiction Books

Electronic information systems should permit patrons to select nonfiction books in ways familiar to them. As noted earlier, an analysis of how patrons selected nonfiction books showed that there were three groups of patrons: those with prior knowledge of the book (24.8%), those who used the library catalog to select a book (19.9%), and those who selected a book at the shelves (55.3%). Since shelf browsers formed the largest group, electronic information systems which include nonfiction books must provide **browsing features** to allow browsers to select a book. Because a substantial percentage of browsers, 38%, reported skimming the pages as a method they used for selecting a particular book (table 30), electronic browsing features must **facilitate rapid scanning** of text.

The public library system in this study arranges nonfiction books by the Dewey Decimal Classification scheme. The effect of a DDC shelf arrangement is to put books in order by subject, and in going directly to the shelves, browsers were actually using a subject approach for selecting a book. Therefore, **subject access** must be provided to nonfiction books in an electronic mode. Based on this study's findings, over half of the users of nonfiction books are browsers. Thus, <u>without</u> subject access, it may be predicted that nonfiction books in an electronic mode will serve less than 50% of potential users of the system.

Previous studies have shown that new book displays influence book selection, and this study's findings confirm this (table 29). About 10% of the browsers selected a book from new displays. This suggests that an electronic information system should include a method of **displaying or highlighting new acquisitions.**

Finally, because a significant group of patrons had prior knowledge of the nonfiction book they selected, either because the book was recommended by a friend, or because they have used the book before, or because they learned about the book from other sources, an electronic information system should **permit users to search for known items.**

4.4.3 Features for Finding Specific Information

The book's index and table of contents seem obvious choices for patrons who are looking for specific information in a nonfiction book. Book indexes and tables

of contents were, in fact, mentioned as important features by a substantial number of patrons in this study (table 18). However, this study found that a majority of the patrons who were looking for specific information, 58.7%, mentioned looking at the entire book to find the information they wanted. "Looking at the entire book" may be interpreted as scanning and skipping through the text. While 18.6% of the patrons who were looking for specific information used the scanning method in combination with other methods, 40.1% used the scanning method exclusively. These data emphasize the need for electronic information systems to permit rapid scanning and skipping through text. Naturally, the system should provide access also to tables of contents, book indexes, prefaces, and illustrative matter. The findings indicate that it would be advantageous for an electronic information system to permit users to use a combination of methods to find specific information. Although more than two-thirds of the patrons who said they were looking for specific information used just one method to find it, an electronic information system might make it easier for these patrons to use a combination of methods.

4.4.4 Scatter of Information in a Nonfiction Book

As noted earlier, the extent of scatter of the desired information throughout a book (table 16) has implications for electronic information systems which include nonfiction books. A patron may read one-fourth or less of a book and therefore be viewed as a target user of nonfiction books in an electronic mode. However, the pages which contain the desired information need not be sequential. In other words, reading a small portion of a book may still involve scanning or skipping through the entire text to find the relevant sections. This emphasizes the need for electronic information systems to facilitate scanning or skipping through text at variable speeds controlled by the user. While it may seem that the in-depth indexing possibilities of state-of-the-art electronic information systems will reduce the need for sequential scanning and skipping through text, for those patrons unfamiliar or new to a subject area, scanning may still be an important way of finding wanted information.

5. Summary and Conclusions

This chapter first restates the purpose of the study. The research design is then reviewed, and this is followed by a summary of the findings. The implications of the findings for electronic information systems are then summarized. The chapter concludes with suggestions for further research.

5.1 Restatement of the Purpose of the Study

This study of how public library patrons use nonfiction books examined the premises underlying the inclusion of nonfiction books in an electronic information system. Given the current state of technology, for users who wish to read a book completely, the electronic medium is perhaps not a better choice than paper. The central premises underlying the inclusion of nonfiction books in electronic information systems are that users read for obtaining information and consequently tend to read books in parts, not completely.

5.2 Review of the Research Design

Five of the twenty sites of the Public Library of Columbus and Franklin County participated in the study. Apart from the Main Library, the branch libraries were selected to represent different types of neighborhoods.

A distinguishing aspect of this study is perhaps its sampling design. First, the relative sizes of the five participating libraries were determined based on two criteria: number of registered borrowers and proportion of circulation totals reflecting nonfiction borrowing. Second, peak and nonpeak periods of library materials returns were determined for each of the libraries. Both factors, relative size and proportion of materials returned during peak and nonpeak periods, were used to allocate 350 interviews among the participating libraries. During a pretest phase of the study, an interview script was developed and refined.

Of the 675 patrons who consented to participate in the study, slightly more than half did not qualify for interviewing, either because they were not returning books for themselves, or because they were not returning any nonfiction books. The data for the study analyses were provided from a total of 347 face-to-face interviews which were conducted at the five participating libraries during the period February 18 to March 25, 1986.

5.3 Summary of the Findings

5.3.1 Selection of Patrons

The 347 patrons of this study represent only 4.9% of all the patrons who entered the library buildings. This percentage is low for many reasons; for instance, not everyone entering the building was returning books, some people refused to participate, some people were missed (interviewers were busy interviewing), etc. However, of those who did complete the interview, an impressive 96.6% reported that they visited the library at least once a month.

5.3.2 Premises of Electronic Information Systems

To a large degree, the data support the premise that patrons consult nonfiction books for obtaining information. Although only 43.8% of the patrons said they were looking for specific information (table 12), a study of verbal responses to researchers' open-ended questions on reasons for borrowing and nature of use indicated that, in fact, 55.9% of the patrons were looking for specific information, and another 35.4% were looking for information in roughly defined areas (table 31). That 84.4% of the patrons stated that they found the information they were looking for, and that 80.8% stated they had a specific use for the information shows that nonfiction books are, indeed, an important source for obtaining information (tables 15 and 21).

The other premise being examined--that nonfiction books are not read completely, but only in parts--was found to be true of approximately two-thirds of all use (table 13). While 34% of the patrons claimed to have read all of the book, a total of 65.9% claimed to have read some portion of it. The patrons who read a portion of the book fell into the following categories: 25.3% read one-fourth or less of the book, 26.8% read half or three-fourths of the book, and 13.8% read almost all of the book.

Patrons' reasons for reading just parts of a book indicate that 75% of those who read three-fourths or less of the book decided to examine only those parts of the book which were perceived as relevant to their specific information needs.

5.3.3 Patrons' Success in Finding Information

A majority of the patrons, 84.4% (table 15), reported they found the information they were looking for, 3.8% were unsuccessful, and 11.8% said they were not looking for information.

5.3.4 Extent of Scatter of Wanted Information

There appears to be a relationship between how much of a book patrons read and their perceptions of the spread of the desired information throughout the book (table 17). The data support what one would intuitively expect: those who reported finding the desired information in few sections of the book also claimed to have read half or less than half of the book.

5.3.5 Features Patrons Used for Finding Specific Information

In all, 152 patrons, or 43.8%, stated they were looking for specific information (table 12). When these patrons were asked to select the features of the book they used for finding specific information, "looking at the entire book" was mentioned most often (table 18). The second most-mentioned feature was the table of contents. Other choices, in rank order, were as follows: the book index, photographs or sketches, tabular matter, preface, and other.

5.3.6 Factors Affecting How Much of a Nonfiction Book Patrons Read

Patrons' perceptions of the importance of the information seem to depend to some extent on whether they were looking for specific information (table 20). While 65.2% of the patrons who said they were looking for specific information also claimed that the information was "very important," only 38.1% of those not seeking specific information made this claim.

Whether a patron had a specific use for the information did not appear to influence how much of a book patrons read (table 21).

Nearly 80% of the patrons had already used or expected to use the information within a month (table 22). This finding suggests again that nonfiction books are an important source for finding information. However, immediacy of use of the information does not appear to influence how much of a book patrons read (table 23).

The context of use was found to have an effect on how much of a book a patron read. Patrons who read for personal use tended to say they read half or more of the book; in contrast, those who said they were reading for school, home, or business use tended to say they read less than half of the book (table 24).

5.3.7 Three Categories of Patrons

The data on how patrons selected a nonfiction book indicate that nonfiction book readers fall into three categories:

- Those who had prior knowledge of the book, or known-item users (24.8%)
- Those who use the library catalog to select the book, or catalog users (19.9%)
- Those who browse at the shelves to decide which book to borrow, or browsers (55.3%)

These three categories provide an empirical model for grouping the population of nonfiction book users in a library setting. A detailed analysis of the characteristics of the three groups suggests that since catalog users were most likely to be looking for specific information and most likely to report that they found the information in one section of the book (table 26), they are the most promising target audience for electronic information systems which include nonfiction books.

5.3.8 Path Analysis

A unique aspect of this study's analyses is the conceptualization of a path model. Given that a patron had a series of options for finding the desired information, a sequence of such choices may be called a path. Patrons' answers to the following interview questions defined their paths through the interview:

6. You decided to borrow <u>this</u> book because you ...
   (1) Had prior knowledge of this book
   (2) Selected it using the library catalog
   (3) Selected it from the shelves

12. Were you looking for any <u>specific</u> information?
   (1) Yes
   (2) No

14. Did you read ...
   (1) None of the book
   (2) Less than 1/4, about 1/4, about 1/2, or about 3/4 (any of these choices)
   (3) Almost all, or all of the book (either of these choices)

17. Did you find the information you were looking for?
   (1) Yes
   (2) No, wasn't in this book
   (3) No, wasn't looking for information

There are fifty-four possible paths through these four questions. However, only twenty-three occurred in this study, and eight paths alone account for 68.72% of the patrons. The patrons who took these eight paths were clustered into four groups, which represent another empirical grouping of the patrons, with some explanatory power. The four groups may be described as follows:

True browsers. These patrons selected the book from the shelves, were not looking for specific information, read part or all of the book, and claimed to have found the information they were looking for; 26.25% of the patrons fell into this group.

Information-seeking browsers. These patrons selected the book from the shelves, were looking for specific information, read part or all of the book, and found the information which was sought; 17.69% of the patrons fell into this group.

Known-item users. These patrons had prior knowledge of the book they borrowed and found the information they were looking for; 12.98% of the patrons fell into this group.

Information-seeking catalog users. These patrons used the library catalog to select the book, were looking for specific information, read part or all of the book, and found the information which was sought; 11.8% of the patrons fell into this group.

5.3.9 Subject Dispersion of Information Needs

The following five interview questions obtained data that related to the subject dispersion of the patrons' information needs:

4. What is this book about?
5. Book call number: _____
10. Can you tell me why you borrowed this book?
12. Were you looking for any specific information?
20. Do you have any specific use(s) for this information?

The researchers obtained varying amounts of data on the subject dispersion of patrons' information needs because not all patrons described the information they were looking for or their specific use for it. Subject dispersion data were examined in four different ways. First, the subject scope of each information need was determined and all were grouped into three levels: specific (55.9%); focused, but not specific (35.4%); and broad (8.6%). Second, the purposes which prompted the information search were grouped. This revealed eleven broad categories: interest, employment, school, home, recreation, and so on. Of these, the two top-ranking categories were interest and employment, and these two categories alone accounted for 46.4% of patrons' stated purposes for seeking information. Third, the DDC numbers of the books which had been borrowed were grouped. About a third of the books which had been borrowed were classed in the 600s, Technology (applied sciences). Another 14.7% of the books were classed in the 300s, Social Sciences. Fourth, in a grouping by topics in which patrons expressed interest, biography topped the list. History and travel, sharing second place, also scored high as topics of interest. Despite the problems of terminology, the topics listing is perhaps useful because it retains the vocabulary patrons used for describing subjects.

5.4 Implications for Electronic Information Systems

5.4.1 Audience for Nonfiction Books in an Electronic Mode

The findings suggest that nonfiction books in an electronic mode will serve at best 5% of the patrons who enter public library buildings. However, this percentage does not reflect in-library use of nonfiction books, and it also fails to reflect the use of nonfiction books which do not circulate, i.e., reference books. In any case, nonfiction books in an electronic mode might serve some of the heavy users of libraries (table 10).

Books which are read or consulted in parts or short sections lend themselves to use in an electronic mode better than books which are read completely. Given the characteristics of the three groups of patrons reported in table 26 (those with prior knowledge of the book, or known-item users (24.8%); those who selected the book at the catalog, or catalog users (19.9%); and those who selected the book at the shelves, or browsers (55.3%)), it appears that catalog users would benefit most from the availability of nonfiction books in an electronic mode. Over 40% of the known-item users read all of the book, so they may therefore prefer to read nonfiction books in paper form. Compared with known-item users and catalog users, browsers were the least likely to be looking for specific information, have a specific use for it, or consider the

information "very important" (table 26). In other words, obtaining information is less critical for browsers.

Within a public library system, the central library of the system seems to be a better choice than the branches for the introduction of an electronic information system which includes nonfiction books (table 12). Findings on the context of use suggest that academic and business libraries' patrons could also benefit from the introduction of nonfiction books in an electronic mode.

5.4.2 Features Needed for Selecting Nonfiction Books

The findings indicate that electronic information systems which plan to include nonfiction books must offer users the following:

- **A subject approach for selecting books.** The majority of the patrons in this study (55.3%) selected books at the shelves, taking advantage of the DDC shelf arrangement used in this public library system. The effect of a DDC shelf arrangement is to put books in order by subject, and in going directly to the shelves, browsers were actually using a subject approach for selecting a book. This is an approach quite familiar to users, and if electronic information systems are to accommodate search methods which are familiar to users, they must permit a subject approach for selecting books.

- **Facilities for known-item searching.** About one-fourth of the patrons had prior knowledge of the book they borrowed. To serve this group (as well as the catalog users, who frequently chose a title approach to the catalog), an electronic information system should permit known-item searching.

- **Features for displaying or highlighting new acquisitions.** Since about 10% of the browsers selected their book from new book displays, an electronic information system should include a similar facility.

5.4.3 Features for Finding Specific Information

The findings suggest that electronic information systems should include **browsing and display features** for scanning text, tables of contents, book indexes, and illustrative material. Book indexes and tables of contents were also mentioned as important features for finding specific information by a substantial number of patrons in this study (table 18). However, the largest percentage of patrons who were looking for specific information in a book, 40.1%, mentioned looking at the entire book as the only method they used to find the information they wanted. These data emphasize the need for electronic information systems to permit rapid scanning and skipping through text and illustrative material, and to allow for the display of tables of contents, book indexes, and illustrative material.

5.4.4 Scatter of Information in a Nonfiction Book

Since reading even small portions of text can involve scanning and skipping through the text to find the relevant information, electronic information systems must provide for this approach to finding information in a nonfiction book. To accommodate individual differences or preferences, electronic information systems should also allow users to scan and skip through the text at variable speeds.

5.5 Suggestions for Further Research

1. The findings of the present study suggest that browsing is of paramount importance to nonfiction book users. A majority of the patrons in this study, 55.3%, browsed at the shelves to select a book (table 25). More than a third of these browsers, 38%, reported that they skimmed the pages to select their book from the shelves (table 30). Skimming the pages is equivalent to browsing or scanning text. Again, of the 152 patrons who were looking for specific information, 58.7% looked at the entire book, and 40.1% did not use any other feature to find the specific information (table 18). "Looking at the entire book" is, again, equivalent to browsing or scanning text. Since a substantial number of patrons seem to employ the browsing technique, whether for selecting a book or for finding specific information in a book, further research on browsing is needed for a better understanding of this widespread activity.

2. Since a third of all the books patrons borrowed in this study were from the DDC 600s, Technology, a further investigation of the 600s by format, intended audience, level of complexity, coverage of topics, timeliness, and so on, might further specify the characteristics of nonfiction books which are suitable for electronic information systems. A similar investigation of nonfiction books used to locate employment-related information (table 32) might also prove helpful.

3. The findings of this study pertain only to public library patrons. Similar studies in an academic or special library setting might indicate whether the percentages of patrons either looking for specific information or reading just parts of a book are higher than they were found to be in the public library. The findings of the present study suggest that, in fact, academic library patrons are even more likely to read nonfiction books in parts, not completely (see table 24 under "school only").

4. Circulating nonfiction books were the focus of this study. Other studies may investigate patterns of use of such materials as reference books or vertical file materials. The study of the use of fiction would also be appropriate, if the subjects of the study are students or teachers of literature.

5. This study investigated the use of books that had been borrowed from the library. How patrons use nonfiction books and other types of material on the library premises is an important area of investigation. Although in-library use studies pose insurmountable

problems of design, on-site use is an area where much research is needed. An in-library use study could perhaps collect data using a combination of methods, for instance self-administered questionnaire, face-to-face interview, etc.

6. The validity of this study's findings depend heavily on patrons' ability to recall how they used a particular book. It might be useful to try another approach in which patrons would jot down the sequence of their information search in the form of a diary. Data obtained in this manner would not depend so heavily on patrons' memories. If a setting could be found where reader privacy is not an issue, videotaping the process in combination with a face-to-face interview would yield rich, reliable information.

7. Conducting a study of how people use books is obviously less costly in a library environment than in a setting where one meets the general population, because the probability of finding a book user is much greater in a library setting. However, the study of how people use books need not be limited to library patrons and libraries. Obviously, libraries are not the only source for obtaining nonfiction books. For definite answers to the question of how people use books, non-users of libraries must be sampled. Besides providing data which are more broadly applicable to the question of how people use books, such a study would have the additional advantage of identifying new audiences for electronic information systems.

Appendix A. Statistical Notes

This study used a stratified random sample. In stratified sampling, the population is divided into sub-populations or strata, each of which is sampled separately. Ten strata were used, i.e., peak and nonpeak periods of circulation for each of the five participating libraries.

Within each of these strata, the sample was considered a simple random sample, although this is at best an approximation. The approximation is based on two points: first, the times of library visits within each stratum were randomized by means of the algorithm described in the body of this paper; second, it was felt that during the site visit, patrons presented themselves more or less randomly. This approximation of simple random sampling may be contrasted with classical simple random sampling, where the sample is drawn without replacement from a fixed, exhaustive list of population members.

The relative size of each stratum was estimated and the sample size for each was proportional to stratum size. There are mathematical justifications for proportional stratified sampling in some cases, but in this study an important motivation was the amount of time available for interviewing. It was expected that the same number of weeks would be required for interviewing at each library if the number of interviews at each library was proportional to its size. This indeed turned out to be the case: interviewing at each library ended on roughly the same date.

Estimates of population percentages made from stratified sampling are not the same as those made from a simple random sample; confidence bounds are more complicated. However, although the technically correct stratified sample estimates and confidence bounds were calculated, the researchers found that they differed very little from the naive estimates and confidence bounds (typically by less than a tenth of a percent). Consequently, only the naive figures are reported in this paper. For example, if the possible answers to a question were "yes" and "no," rather than reporting the complicated stratified estimates, the researchers reported

Yes = 175 responses	No = 175 responses	Total = 350 responses
(175/350) x 100% = 50%	(175/350) x 100% = 50%	Total 100%

Furthermore, due to the branching and skipping patterns of the interview script, the number of respondents differed for many questions. In other words, the effective sample size for some questions was the full 347 patrons, while for other it was smaller, e.g., 152 patrons. Thus, statistical inference from the data becomes more complex, reinforcing the decision to report only the naive estimates or simple percentages.

A deeper and more important difficulty was that of unambiguously defining the population. It is this problem that gave rise to the complicated weighting

scheme designed to find the libraries' relative sizes. The researchers were interested in nonfiction book users; however, a "nonfiction book user" is not an unambiguous category--a person can be a nonfiction book user on one day and not on the next. Thus, the researchers were forced to define the sampling unit as "a particular person returning a particular nonfiction book." Hence the same person returning different books on different occasions, or different people returning the same book, constituted different sampling units.

Due to this difficulty, a conflict arose: on the one hand, there are by definition an infinite number of nonfiction book users for each library (as time goes on), and this study examined one portion of those users at one particular time. On the other hand, there are clearly more users of the Main Library than of any of the branch libraries. The researchers adopted the uneasy compromise solution of defining the relative size of each library (and hence of each stratum) by the weighting scheme described in the body of this paper.

Unfortunately, this problem only became apparent as the study progressed. Nevertheless, the study was conducted under the standard statistical survey sampling rubric. More sophisticated statistical techniques exist for capturing information in dynamic situations such as those posed by this study, and they should be used in the design of future studies.

Appendix B. Supplementary Tables

Table B-1
Premise Two: Nonfiction Books Are Read In Parts, Not Completely

Interview Question 14: Did you read ...

	Libraries					
Amount read	Main n=154 %	Reynolds-burg n=104 %	Dublin n=51 %	North-side n=24 %	Driving Park n=14 %	All Patrons N=347 %
None of the book	3.2	1.0	2.0	--	7.1	2.3
Less than 1/4 of book	16.2	6.7	5.9	12.5	7.1	11.2
About 1/4 of the book	12.3	10.6	15.7	4.2	14.3	11.8
About 1/2 of the book	12.3	23.1	15.7	25.0	7.1	16.7
About 3/4 of the book	10.4	9.6	9.8	12.5	7.1	10.1
Almost all of the book	16.9	10.6	13.7	8.3	14.3	13.8
All of the book	28.6	38.5	37.3	37.5	42.9	34.0
	99.9	100.1	100.1	100.0	99.9	99.9

Table B-2
Patrons' Success in Finding Information

Interview Question 17: Did you find the information you were looking for?

	Libraries					
Answers	Main n=149 %	Reynolds-burg n=103 %	Dublin n=50 %	North-side n=24 %	Driving Park n=13 %	All Patrons N=339 %
Yes	89.9	85.4	78.0	54.2	92.3	84.4
No, wasn't in this book	4.7	2.9	4.0	4.2	--	3.8
No, wasn't looking for information	5.4	11.7	18.0	41.7	7.7	11.8
	100.0	100.0	100.0	100.1	100.0	100.0

Table B-3
Extent of Scatter of Wanted Information

Interview Question 18: Most of the information you wanted was in ...

	Libraries					
	Main n=134 %	Reynolds-burg n= 88 %	Dublin n=39 %	North-side n=13 %	Driving Park n=12 %	All Patrons N=286 %
One section	6.7	6.8	7.7	7.7	--	6.6
A few sections	14.2	12.5	20.5	30.8	16.7	15.4
Several sections	23.9	22.7	25.6	7.7	25.0	23.1
Many sections	21.6	14.8	17.9	23.1	--	18.2
All sections	33.6	43.2	28.2	30.8	58.3	36.7
	100.0	100.0	99.9	100.1	100.0	100.0

Table B-4
Patrons' Perceptions of Importance of Information

Interview Question 19: How important is this information?

	Libraries					
Answers	Main n=133 %	Reynolds-burg n=88 %	Dublin n=39 %	North-side n=13 %	Driving Park n=12 %	All Patrons N=285 %
Very important	60.2	42.0	33.3	61.5	66.7	51.2
Somewhat important	34.6	50.0	59.0	23.1	25.0	41.8
Not that important	3.8	5.7	7.7	15.4	8.3	5.6
Not important at all	1.5	2.3	--	--	--	1.4
	100.1	100.0	100.0	100.0	100.0	100.0

Table B-5
Percentage of Patrons Reporting Specific Use

Interview Question 20: Do you have any specific uses for this information?

	Libraries					
Answers	Main n=134 %	Reynolds-burg n= 88 %	Dublin n=39 %	North-side n=13 %	Driving Park n=12 %	All Patrons N=286 %
Yes	81.3	78.4	82.1	76.9	91.7	80.8
No	18.7	21.6	17.9	23.1	8.3	19.2
	100.0	100.0	100.0	100.0	100.0	100.0

Table B-6
Immediacy of Use of Information

Interview Question 21: When do you expect to use this information?

	Libraries					
	Main n=109 %	Reynolds-burg n=69 %	Dublin n=32 %	North-side n=10 %	Driving Park n=11 %	All Patrons N=231 %
Have used already	56.0	58.0	62.5	70.0	36.4	57.1
Within a week	8.3	5.8	12.5	10.0	18.2	8.7
A month	11.9	15.9	9.4	--	18.2	12.6
Six months	19.3	15.9	12.5	10.0	9.1	16.5
A year	3.7	2.9	3.1	10.0	--	3.5
Perhaps never	0.9	1.4	--	--	18.2	1.7
	100.1	99.9	100.0	100.0	100.1	100.1

Table B-7
Patrons' Methods of Selecting a Nonfiction Book

Interview Question 6: You decided to borrow this book because you ...

	Libraries					
Answers	Main n=154 %	Reynolds-burg n=104 %	Dublin n=51 %	North-side n=24 %	Driving Park n=14 %	All Patrons N=347 %
Had prior knowledge of this book	28.6	21.2	19.6	20.8	35.7	24.8
Selected the book using the library catalog	21.4	20.2	21.6	16.7	--	19.9
Selected the book from the shelves	50.0	58.7	58.8	62.5	64.3	55.3
	100.0	100.1	100.0	100.0	100.0	100.0

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